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"THE PARTY WAS A LUGE SUCCESS"



WINTER SPORTS

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Back-Stage in Madeira

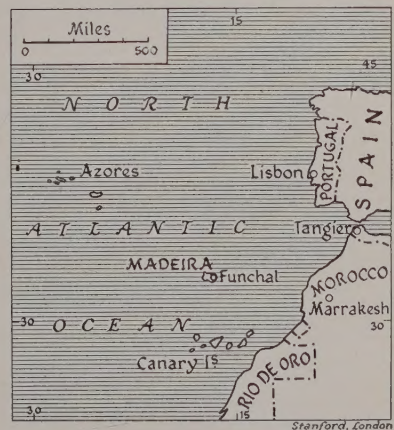
Notes and Photographs by Margaret Goldman

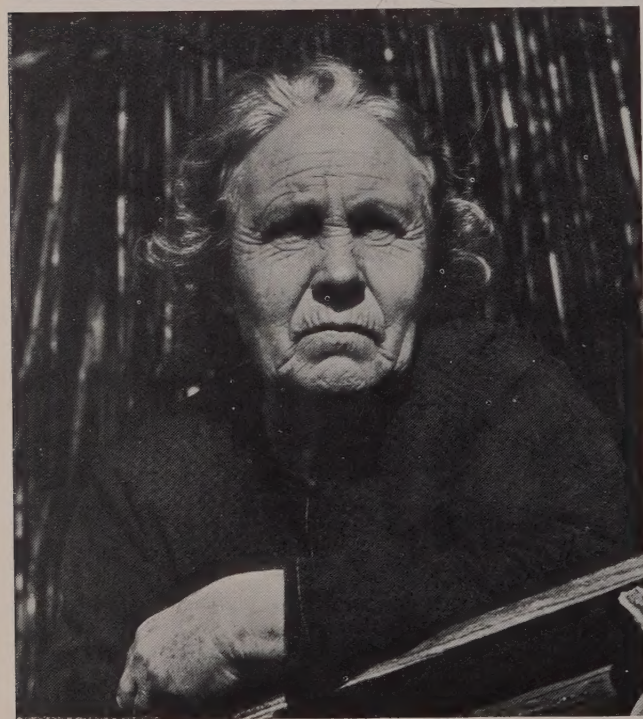


Winter resorts and tourist centres have a life of their own which, however dependent on tourist visitors it may be, is yet to a large extent unobserved by them. The following pictures are intended to show something of that life in Madeira, which has steadily grown more popular since medical men, like the one in the 'Bab Ballads', began to say:

*You'll die in a very short while
If you don't set sail for Madeira's isle.*

Madeira is the first port of call for ships coming from South Africa and South America after weeks of ocean passage and the first place of sub-tropical sunshine, fruit and flowers that the ocean passenger meets on his way south. In the capital, Funchal, hotels, restaurants and local industries all move to the rhythm established by the almost daily arrival of mail packets and pleasure-cruise liners—the mainspring of the town's existence





Senhora Martinez has watched the island's growth in popularity from the early days of steam to those of 25,000-ton oil-burning liners. She is an embroiderer of linen for sale to visitors, while her daughter Manoela is cook to some English people wintering in Madeira

They both look out over the harbour to see what boats are in that morning, and then go down to the market in the town. To the same destination the flower-woman descends early every morning from her mountain village with a basket of flowers on her head. In it she has—



—bunches of white and rose gardenias, dazzling full-blown arum lilies, orange and purple-tinged freesias

Before sunrise little carts rattle in from the country to supply the market. By half-past seven it is thronged with a jostling crowd of restaurateurs, housewives, cooks, vendors, peasants and loiterers

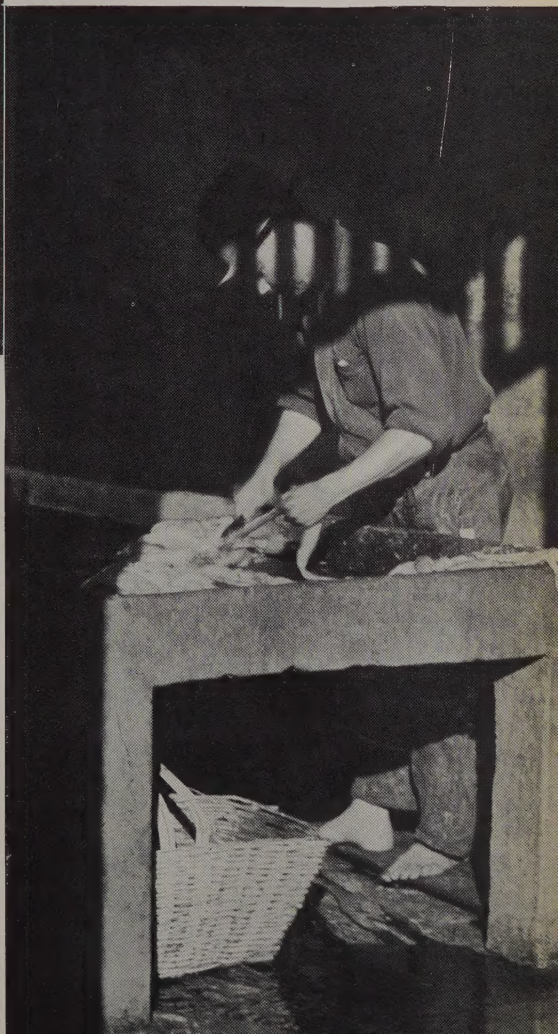


As the sun rises the crowd thins out, and the stall-holders cover their wares with tarpaulin, or put up awnings. The fruit-seller cuts a passion-fruit in half and sucks at it lazily





The onion merchant yawns in the heat and looks drowsily at his vegetables spread out on the ground beside him in neat mounds



In the fish market it is cooler; the genial vendor standing before a stone trough shining with fish scales slits a mullet, cleans and washes it, and hands it to the buyer wrapped up in yesterday's newspaper

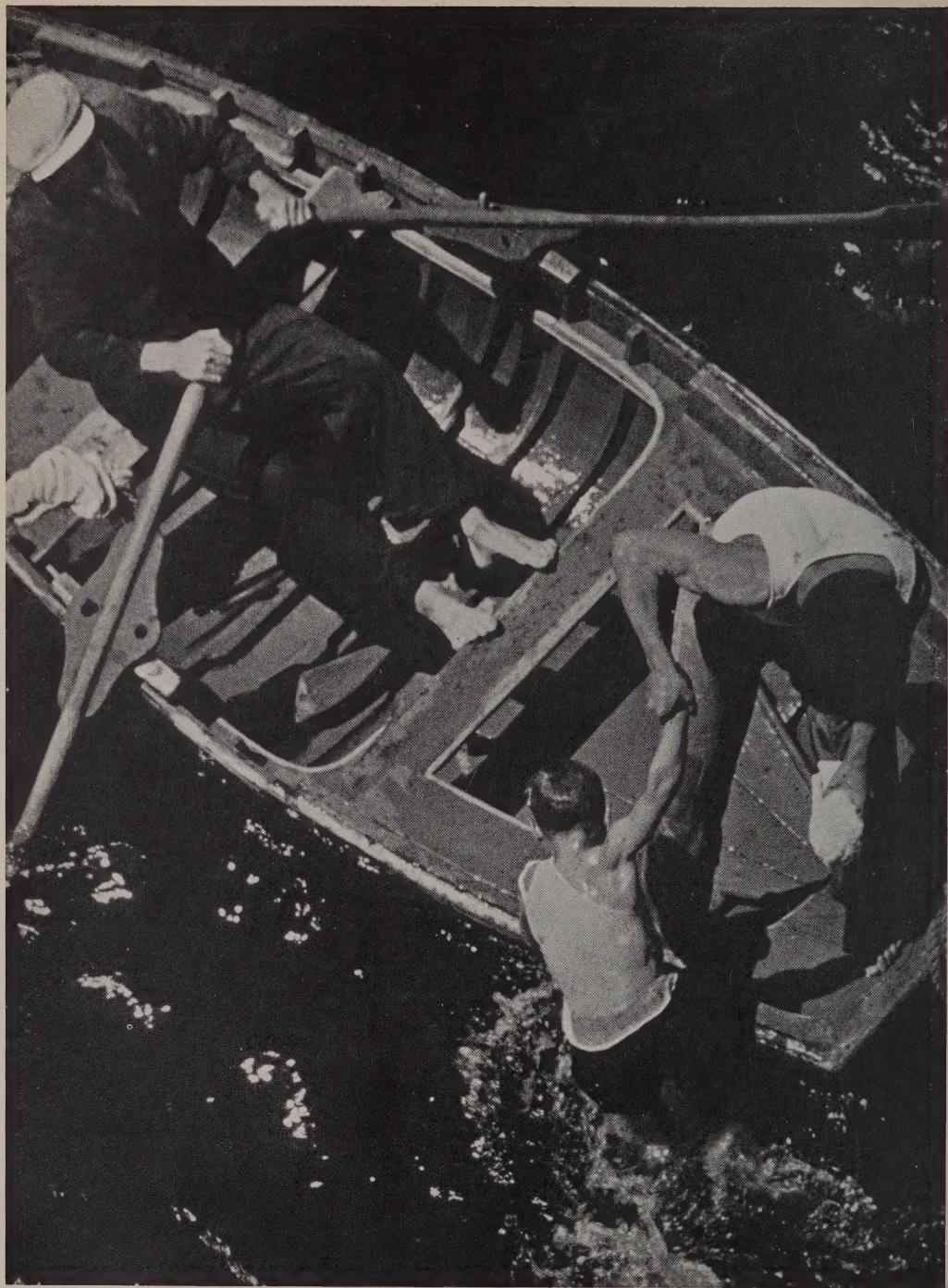


The seller of little birds—canaries, green parrakeets and love-birds—stands on the quay wall gazing out to sea. Suddenly he sights the cruising liner as she rounds the point, and gives a warning whistle

At once the beach springs to life, and before the liner has had time to anchor she is surrounded by a mob of little boats overladen with wickerwork chairs, baskets, rugs and embroidery, jostling for the best place at her side



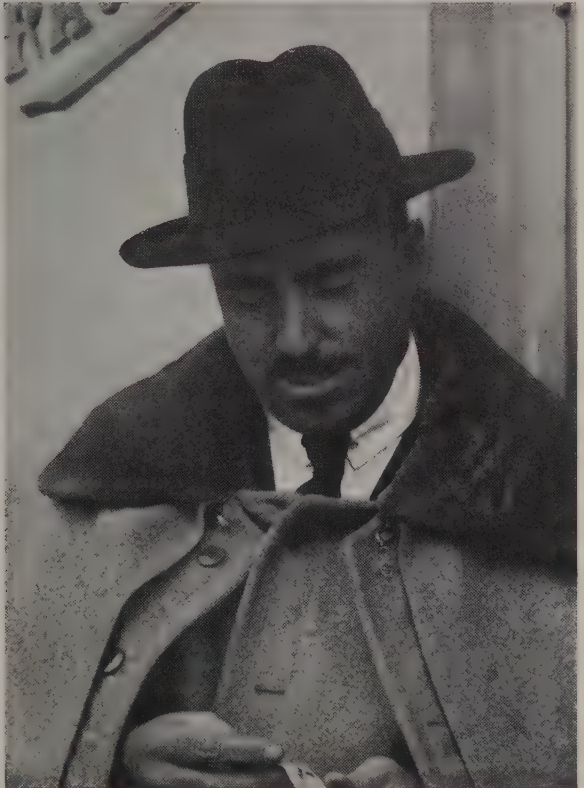
'Fine chair, lady, hand embroidery, lady, real Madeira embroidery, velly cheap, velly good'



'Small boy dive, small boy dive.' A shilling is thrown and in after it plunges the boy. Diving deep and rising to the surface with the coin glittering between his teeth, he is hauled into the boat



On the jetty waits an expectant crowd: hotel porters, guides. 'Take you up the mountain, Sir; this way to the Lido, Sir.' Flower-girls and the drivers of ox-drawn sledges stand by and hope for trade



In the evening the ship's siren hoots, and back go the tourists laden with flowers and parcels; the ship sails; and Funchal relaxes. The guide stands by a café and considers, not without satisfaction, his day's earnings



Above the town is the Quinta of Senhora Martinez, surrounded by a vineyard. There in the evening João meets his little cousin and tells her of his first day as a diver. 'I shouted small boy dive louder than anyone else,' says João



Across Saudi Arabia

by GERALDINE RENDEL

The Central and Eastern provinces of Saudi Arabia are seldom visited by European travellers. Only two European women, of whom Mrs Rendel is the second, have had the privilege of crossing the Arabian peninsula from sea to sea and of staying in Hasa and Riyadh. By the invitation of King Ibn Saud, Mrs Rendel was enabled to accompany her husband in the early spring of last year on this most interesting journey

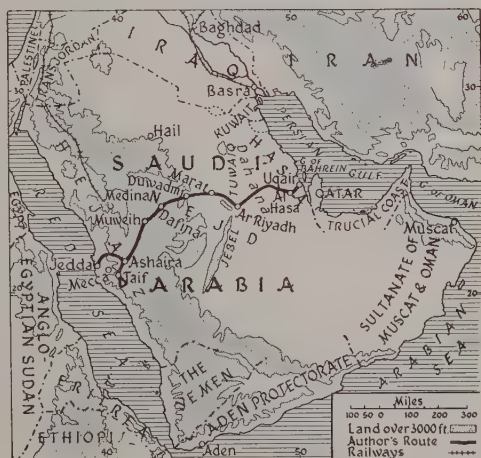
To land in Saudi Arabia is to enter both an older and a newer world. An older world, because its social philosophy still holds so much of the best of the Middle Ages; a newer one, because it is one of the newest of the larger post-war states. It was in the month of Muharram 1356 of the Moslem era that we landed at Uqair, and, but for the cars awaiting us, it might well have been March 1356 of the Christian era; for one must think in terms of that date, or even a century earlier, really to understand the Saudi Arabian people.

Saudi Arabia owes its newly won unity and political importance to the genius of one man: King Abdul Aziz Abdurrahman Al Feisal Al Saud, better known to Europe as Ibn Saud. The history of the rise of his kingdom, which is also the story of his life and personality, has been written by others better qualified than I. Sufficient to say here that from being a helpless exile in Kuwait in 1891, he gradually succeeded, step by step, in establishing his sovereign rule over practically the whole of the Arabian peninsula. His vast possessions extend from the borders of Iraq and Transjordan on the north, to the Yemen and the Aden Protectorate on the south; from the Persian Gulf, the Trucial Coast and Muscat on the east, to the Red Sea. Although half as large as India, this area has no perennial rivers, has one of the smallest rainfalls in the world, and a population which is roughly estimated at not more than three millions. The holy places of Islam, Mecca and Medina, to which all Moslem eyes are turned, lie

within Ibn Saud's Kingdom; and this fact and its position astride the route to the East give Saudi Arabia an importance out of all proportion to its population and economic position.

Uqair seen from the Gulf of Bahrein appears a mere speck of civilization, lying between the sea and the desert sands, a northern spur of the Great Dunes of Southern Arabia, which sweep right up to its walls. It consists of a fort, a Customs House, a few houses and a quay; at which when we landed three or four picturesquely dilapidated dhows were unloading ill-smelling fish, destined for camel fodder.

In spite of the opening up of Arabia it is still considered desirable that the European should wear Arab dress. In an upper room of the Customs House at Uqair, therefore, we arrayed ourselves in Arab clothes. I put on the 'aba or cloak



of black camel-hair, embroidered in gold thread, and the thick black veil, which form the street or travelling dress of the Arabian woman. The cloak is worn over the head, concealing the hair, and trails upon the ground. As I was above average height, mine did not completely conceal my feet, and betrayed my foreign origin on more than one occasion. It was not comfortable clothing to one unaccustomed to it, but I was often grateful for it as a screen from too inquisitive eyes. Few European women enter Nejd and my presence naturally excited a good deal of curiosity; although the Arabs' unfailing

courtesy and respect for women prevented me from ever feeling really embarrassed.

We left Uqair in Ford cars and went westward across the sand dunes. That first race over the desert into the sunset was a thrilling experience. Up one great dune and down another we sped all out, with pressure lowered in the tyres of our cars to minimize the risk of sticking in the sand; and as, from time to time, we crossed firmer ground, we stopped to cool the engines. The sands ranged in hue from a rich honey colour to a silvery mauve, which deepened to purple as the sun sank. Some of the larger dunes were windswept into great curves and ridges and ribbed like the sands of the seashore at a low tide.

Fifty miles of sand brought us to the edge of the Hasa Oasis. This large and fruitful oasis supports some seventy or eighty villages, as well as the city of Al Hasa, the capital of the province of that name. Al Hasa is famous for its gardens and the warm sulphur springs which irrigate the whole oasis. It is surrounded by mud-built walls, and has an inner walled citadel, the Kut, with fortified gates and massive round towers. Inside the Kut is the Palace of the Amir of Hasa, in the guest-rooms of which we were lodged. Our rooms were on the first floor, opening onto a gallery which surrounded an open court with columns and perforated balustrade. They had many unglazed lightly barred windows, with pierced wooden shutters, which had to be kept closed if one did not wish to be overlooked from opposite houses. Our reception room had cushioned settees all round it, so high from the ground that it was more comfortable to sit on them in the manner for which they were intended—cross-legged. There was a frieze of open-work plaster panels of beautiful geometrical designs, each one different, below the ceiling. Al Hasa is distinguished for this plaster work, as also for incised plaster decoration on flat walls. We saw much of it, including several fine



All photographs by George Rendel

For European travellers, discretion and local custom impose the wearing of Arab dress. The author in her gold-embroidered 'aba



The gardens of the Hasa Oasis, famous throughout Arabia, are watered by many springs. Notable among them are the warm sulphur lake of Ain Al Harra, used for outdoor bathing, and the blue-green pool of Khodud, 'like a jewel in its setting of palm trees'





Though the Arab steed is fast being replaced by the motor car for long journeys, the open-air stables of the Amir of Hasa are still well stocked



Saudi builders, moreover, maintain their distinctive architectural traditions, especially that of decorative plaster work, here seen on the doorway of a recently built merchant's house

maindoorways ornamented in this manner, of one of which we obtained a good photograph.

The bazaar is in a wide street outside the Kut. An arcade of round arches, with lunettes above them opening to inner bazaars, runs along one side; and on the other are the walls and towers of the Kut. Most Eastern bazaars have been watered down by Western influence. A great deal of what one sees in them is there because Westerners come to find it there. The people of Al Hasa were selling and buying, carrying on the routine of their daily lives entirely oblivious of any foreigner's interest in their customs and traditions. There was nothing for sale except the commodities they needed for themselves: dates, rice, spices, fruit, meat and vegetables and simple household necessities. One of the most picturesque stalls was piled with ripe citrus fruit, the size of small melons, with rough knobbly rinds. The women shopping in the bazaar were exceedingly interested in me. They soon discovered how spurious I was and pressed close round me, peering into my veiled face. Many of them wore black gauze 'abas, much lighter and cooler than mine. I asked to be allowed to wear one, but was given to understand that no lady of distinction would be seen in anything so flimsy. Many of the men also were wearing summer 'abas of brown or cream gauze, with gold-embroidered edges. Al Hasa is renowned for its gold-thread work, and all the most beautiful 'abas are made there. Camels strolled down the centre of the roadway with their loaded packs. The large white donkeys of Hasa, famous all over the East, their legs and bellies painted with henna, scurried hither and thither through the packed bazaar, pursued by small boy drivers calling "Ba'lak" (thy attention) as they ran behind them.

Later we visited the gardens and springs. Khodud, a spring about three miles out in the oasis, rises from the centre of a pool

of deep blue-green water, and distributes itself by fast-flowing streams through the date gardens and rice fields. The loveliness of this pool, like a jewel in its setting of palm trees and reflecting their slim trunks and graceful fronds in its crystal depths, is not easily to be forgotten. Umm Saba, 'Mother of Seven', was another enchanting spot; more open and sunlit than Khodud. The spring bubbled up from a rocky-mouthed well in the centre of a deep harp-shaped pool of water, so clear that one could almost count the grains of silver sand on the bottom. This pool fed seven separate streams at different levels, flowing between low walls to the gardens they irrigated.

We were shown two warm sulphur springs used for bathing: Ain Najm and Ain Al Harra. Ain Najm is completely enclosed, and has a house built over it where baths may be taken. Ain Al Harra is a warm lake, which is much used for outdoor bathing, one side of it being walled off for the use of women.

Under the date-palms in the gardens fruit is grown; and peach, pomegranate, citrus and lemon trees were in flower. Some of the gardens had summer pavilions with loggias open to the palm groves, and one which we visited had a delightful bathing pool. In one of these pavilions we were hospitably entertained. A little table was spread with fruits preserved in syrup, sweetmeats, such as halva and loukoum, and fancy biscuits of various kinds. Tiny green limes about the size of walnuts, and bunches of oleander and lemon blossom, were laid upon each plate. Tea was served in small glasses, and we ate and talked, to the strange accompaniment of jackals calling in the oasis around us, until sundown.

As the sun set, the brother of our host came out of the house and gave the Call to Prayer. Our host rose from his place at the table, and the whole of the little household assembled and stood in two rows, one behind the other. A carpet was spread,

and one from their number knelt upon it and led the Evening Prayer.

Our departure from Al Hasa was in the nature of a spectacle. A considerable gathering assembled outside the Amir's Palace to see the camp equipment loaded onto the lorries which, with four cars and a Ford brake, were to form our convoy. Some of the furniture thoughtfully provided by our hosts for our comfort, such as a large dining-room table and six cane-seated windsor chairs, which projected from one of the lorries like the quills from a porcupine, excited much comment.

The caravan route from Al Hasa to Ar Riyadh runs westward; but cars take a more north-westerly direction to avoid some specially difficult places. Even so the going is very bad at times, and in sandy areas often loses itself altogether.

About fifty miles out from Al Hasa we encountered our first really difficult sand. But eventually we emerged in safety and reached Al 'Uraira in the late afternoon. This is a deserted Ikhwan Settlement of the Ajman tribe and consists of seven well-built houses, seven fine tamarisk trees and three wells of sweet water, at which our men filled their water-skins. The Ikhwan, or Brotherhood, are a force of Wahabi warriors, not unlike Cromwell's Ironsides, created by King Ibn Saud in 1910. The Wahabis are the puritanical Moslem sect to which the majority of the Saudi Arabians belong. Their discipline allows of no alcohol or tobacco, no music or dancing, no pictorial or representative art. We found no statues or pictures in Nejd; I do not even remember, among the many beautiful carpets we saw in the course of our journey, any that had designs of animal or bird life.

We camped that night under a low ridge to the south of our track, thirty miles only beyond Al 'Uraira. A strong south-easterly wind had sprung up at sunset and was blowing the sand over us most unpleasantly. The lorry with our tents was still behind us, no one quite knew how far;

and we had only an open car in which to shelter from the driving sand. Brushwood was collected and a fire soon burned brightly, around which our party gathered and made tea in a petrol can. A couple of hours later, the missing lorry arrived, the tents were put up and, incredibly, I slept in spite of the roaring of the wind and the swaying of the tent.

The country we crossed next day had many Beduin tents dotted over it and herds of camel grazing. We went over to a Beduin camp just off our track and asked for milk. A warm welcome was extended to us and a large pail of camel's milk was brought, into which our party dipped bowls and drank their fill. It had a froth like sea foam on the top and I found it quite delicious. They also gave me *laban*, a hard curded milk, which looked like potsherds and tasted like strong cheese.

I visited the women's tent, and found them stirring a pot of white broth over the fire with a bunch of dry camel-thorn twigs. They told me it was truffles cooking in milk. Truffles are fairly plentiful in Eastern Arabia and a dish much in favour in the desert. I had eaten them in Bahrein and found them excellent. The Bedu woman is not so strictly veiled as her town sisters. She wears a mask instead of the veil, leaving the eyes free, which is more practical for the heavy work she has to share with her husband and the hard life of the desert.

Three small shepherds, aged ten and eight and six years old, came to make our acquaintance. They looked like slim fauns, with their lean lithe bodies showing through their ragged thaubs, and their keen intelligent faces. I offered them chocolate, which they eyed with grave mistrust. When finally persuaded to taste it, they spat it out in frank disgust. But the flat loaves of the desert were accepted with dignity and started on forthwith.

Towards midday we dropped from a high stony table-land onto the Dahana Sands. Though marked on the maps as a

On the journey across Arabia, pulling cars out of heavy sand was a daily occurrence, mitigated by the inexhaustible good humour of the Arab members of the convoy



Occasional Beduin encampments offered a warm welcome, as well as refreshing camel's milk and truffles! Chocolate, with its exotic flavour, was not appreciated as a return of courtesy



Between the long stretches of completely barren gravel, sand and salt plain, the desert was in flower, with ample grazing for herds of camel and their beige-orcream-coloured young



sandy area, these sands are fertile and are one of the great grazing grounds of the Eastern desert. We must have crossed a hundred miles of flat steppe, covered with camel-thorn in flower, barley grass and other vegetation, with many camel grazing, and occasional Bedu tents. We left it at length for country of a more broken type and arrived at Ramah Wells. Here there are six important wells on a small rise; with a camel drawing water from the largest of them.

A message from the Amir Saud, the Crown Prince of Arabia, reached us here, suggesting that we should pass the night at his hunting-camp at Rumheya, about fifteen miles further on, before coming on to Ar Riyadh. Our visit to this camp was a most interesting experience. We were luxuriously housed in a large double pavilion, belonging to the Amir Saud, which took one straight back to the golden age of Harun Al Rashid. It was lined with a red and gold material and carpeted with fine Persian rugs; and on the floor of the inner sleeping-tent was a couch with silken cushions.

I was taken, strictly veiled, to see the Amir's hunting-hawks; lovely keen-eyed birds sitting on their keeper's wrists and each answering to its name. Their leather hoods were removed in order that I might stroke their heads; an attention which they obviously appreciated.

Before we left in the morning, the camels and flocks were collected for our inspection. There was a large flock of brown and white sheep, and goats, and three herds of camel, with seventy or eighty calves. The young camel is an entrancing creature, with a woolly coat in varying shades of cream and beige and brown and deliciously irresponsible legs, which he flings about in all directions. Some of the babies were so young that they could hardly walk. There were some exciting moments when they were separated from their mothers, in order that we might take photographs of them.

The approach to Ar Riyadh, the capital of Saudi Arabia, is over mile after mile of high-lying ochre-coloured gravel plain, broken by long ridges of hills, without a sign of vegetation. At last a dim line of walls and towers rises out of the desert; and a belt of emerald green across the prevailing aridity reveals, as one draws nearer the city, the palm groves and gardens of the beautiful Riyadh oasis.

Ar Riyadh is surrounded by mud-brick walls with towers at intervals. We entered the city by the Thumairi Gate, which leads up a wide street with high houses of mud and limestone built straight onto the road, to the Palace Square. This square is very fine. King Ibn Saud's palace fills the western side of it; a guest-house for tribal sheikhs the eastern; and a double colonnade runs across and closes the northern end. When the King is in residence, which is about six or seven months of each year, the square is constantly filled by Beduin, who come in from the desert to discuss their affairs with him. They are allowed to camp in the square for three days, the traditional limit of desert hospitality, with free subsistence.

King Ibn Saud's palace is a high, fortified building with two massive towers, and a simple line of perforated decoration across its great wall. Unquestionably beautiful in its own style, it was a revelation to me of how fine in line and proportion modern Arabian architecture can be. It is surrounded by a network of smaller palaces occupied by the King's many sons. These palaces are connected with the Royal Palace by archways and passages, and the entire area covered by Royal residences must be a very considerable part of the city.

Behind the Palace Square lie the Bazaar and the Great Mosque. The Mosque, like all religious buildings in Nejd, is of extreme simplicity, with a stunted and inconspicuous minaret, and without exterior decoration of any kind. Only followers of Islam are admitted to



'At last a line of walls and towers rises out of the desert': Riyadh, capital of Saudi Arabia. Besides local products and Indian groceries and spices, goods from countries as far distant as Japan, Germany and Czechoslovakia are on sale in the Riyadh bazaars





King Ibn Saud's palace, where he resides for six or seven months of the year, fills the western side of the Palace Square, the northern end of which is closed by a double colonnade

Considerations of Moslem tradition, and in former times the needs of defence, have played their part in establishing a style of architecture which admirably expresses the simplicity, dignity and self-discipline of the Wahabis

the mosques in Saudi Arabia, so I never saw the interior of one. The bazaar is less interesting than that at Al Hasa.

During our visit to Riyadh, we were housed in the new Badia Palace, one of the two summer palaces built at different times by King Ibn Saud for himself and the Crown Prince. They both stand on the western edge of the Wadi Hanifa, some five miles north-west of Riyadh, looking over the Wadi to a small mosque on the opposite side. The new palace, built of mud-brick and limestone round two open courts in the traditional Moslem style, is a charming structure. The doors and ceilings are of palm and tamarisk wood, and we found here again interior plaster decoration similar to that which we had admired at Al Hasa. This form of decoration appealed to me increasingly. It broke the coldness of plain white walls, without losing the charm of flat surfaces and simplicity. The doors were all painted in gay coloured designs ; giving a welcome note of warmth in the prevailing whiteness. Behind the palace were large palm gardens, irrigated by deep wells. This type of well is known as *Sania*, and is worked by six white Hasa donkeys. Each donkey pulls up one water-skin, which empties itself into the water channel as the donkey reaches the end of his pull. The creaking of the pulleys to which the skins were attached was a continuous and discordant noise, known as the donkey's orchestra.

Higher up the Wadi Hanifa and some ten miles west of Riyadh stand the ruins of Dar'aya, the old Wahabi capital of Nejd under Turki Bin Abdulla. The city was destroyed with fire and sword by the Egyptians under Mahomet Ali in 1818, and the present capital, Ar Riyadh, was built to replace it. The immense height of the walls still standing and the luxuriance of the palm and fruit gardens are a remarkable monument to the early greatness of the Wahabis.

We left Riyadh on March 12th and

crossed the Wadi Hanifa at Jubaila, some 18 miles north-west. Thence through Awaina and over the Jebel Tuwaiq hills to a new type of country with the fortified villages of Barra, 'Awainid, and after a long stretch of arid desert, Marat. Marat is said to have three thousand inhabitants and its mud walls are of a deep red, not unlike Devonshire soil in colour. It has considerable date-gardens stretching beyond its walls. Just before Marat, we got our first sight of the Nafud Turaif Al Habi, a long ridge of orange-pink sands to the north of our track. We saw them first as part of a mirage, looking like islands in an azure lake. As we drew nearer the phantom water vanished and the colour of the sand deepened to flame. With wide stretches of grey camel-thorn and light green barley grass in the foreground, it



King Abdul Aziz Abdurrahman Al Feisal Al Saud, the Napoleon of Arabia, who now rules nearly the whole Arabian peninsula

The interior of the new Badia Palace conveys the same atmosphere of dignity and restraint in the geometrical decoration of its deep-shadowed galleries—



—where, against a background of dazzling white plaster and gaily coloured doors, the King's sentries in their flowing robes mount guard over the guests' apartments



Amir Saud, Crown Prince of Saudi Arabia, with his younger sons, Prince Fahad and Prince Muhammad

made a combination of colours that I shall not easily forget. Later we crossed the Qunafidha Sands; benevolent sands these, with a binding of Arfaj and Thamam bushes, which made going easier. But the worst was yet to come.

As the sun was sinking we reached the edge of the Nafud Al Sirr. These soft and treacherous sands are the most difficult to cross on the whole route. They had not been made easier by the recent passage of King Ibn Saud and his family and entourage in some three hundred cars and lorries on pilgrimage to Mecca. The track, poor enough at all times, had suffered severely and in many places we had to abandon it and make our own. To cross great stretches of soft sand safely, it is essential to attain as high a speed as possible. To slow down is to stop; to stop is to sink and stick. The Arab, therefore, drives his car hell for leather across the

sand; avoiding what he can and going over what he cannot; and thinks nothing of taking a small bush or good-sized rock in his stride. It took us fifty minutes to cross these sands, and we had the last quarter of an hour in the dark. I confess I was extremely relieved when we emerged and, after another mile or two, found ourselves at Duwadmi Fort and village, where we purposed to pitch our camp for that night. Except for Muweih Fort, which is 250 miles further, Duwadmi is the only fixed human habitation for nearly 500 miles on this route.

To pitch a camp one must have one's camp equipment, and ours was in a lorry which had sunk in the Nafud we had just crossed. The car which had our provisions was also nestling somewhere in the sands behind us. We were bedless and supperless; I do not know which prospect I liked the least. The Amir of Duwadmi



King Ibn Saud's summer residence, the new Badia Palace, built in 1935 of mud-brick and limestone, looks across the Wadi Hanifa, which is a river only in the rainy season



Ten miles west of Riyadh stands 'a remarkable monument to the early greatness of the Wahabis' —the ruins of Dar'aya, the former capital of Nejd, destroyed by the Egyptian invaders in 1818

Fort solved our problem by kindly giving us a large upper room in the Fort and offering to kill and dress a sheep for our supper. As we did not feel equal to so substantial a meal at that late hour (it was nearly ten o'clock) we contented ourselves with tea and biscuits and chocolate. We spread the rugs and quilts we had with us on the floor and passed the night in tolerable discomfort, eased by hearing the missing lorries and cars come in, one by one, during the watches of the night.

Large granite tors and blocks of black basalt were strewn over the barren plain we crossed next day. We saw many mirages; some so close that one longed to go and dip one's burning face in the convincing appearance of water with which they mocked us. Although it was only mid-March, the heat at midday was great,

with a strong burning breeze that caught the sand up into spiral columns and carried it along like miniature whirlwinds. I realized how the idea of genii appearing had been suggested to the tellers of Arabian fairy tales.

We passed many lorry-loads of pilgrims returning from Mecca, especially near the wells of 'Afif.

Having covered two hundred miles, we had an early and comfortable camp at Dafina. Several Beduin from neighbouring tents, whose fires we could see gleaming in the darkness, dropped in and supped with us. Who cooks in the desert is the host of the Beduin. When they see a camp fire burning, they all come in, taking their welcome for granted, and sit down with the rest. Be it said they are equally hospitable themselves.



The Shafa Hills near Taif, with peaks rising to 9000 feet, crowned with watch-towers, strike an unexpected note in Arabian scenery. Ten years ago they were infested by bandits—



—but now, under the firm rule of Ibn Saud, travellers may pass through them safely



A new road to the coast, constructed by the Saudi Arabian Mining Syndicate, 'goes through endless miles of high-lying plain strewn with black lava rock . . . and is partly metalled'

Our first fifty miles on the following morning were across the great salt plain known as Khabra Khal. Parts of this sabkat were so thickly covered with salt that it looked like freshly fallen snow. Muweih Fort was our first halt. This is used as a petrol store, and also marks the boundary between Nejd and the Hejaz. It is a sordid spot, disfigured by the refuse from passing caravans and empty petrol drums.

In the late afternoon we reached Ashaira, one of the favourite camping grounds of King Ibn Saud. Green and wooded, it has two good wells with a stone above them, bearing an inscription saying that they were rebuilt by the King. Here we passed a comfortable night in a camp which we found already prepared for us. Our thoughtful and generous hosts, having heard that we had left so much of our camp furniture in the Nafud, had sent a fresh supply from Mecca; also a most capable cook, who prepared us a suc-

culent meal of six courses, which was almost overwhelming after the meagre days in the desert. At Ashaira we reached the edge of the Central Arabian Plateau, which here rises to a height of 4000 feet before dropping to the coastal plain. The following day we went on to Taif and made an expedition into the Shafa Hills, abandoning our cars and climbing the rugged defiles on ponies, escorted by local tribesmen provided by the Amir of Taif. It is fine, rugged, granite country, with peaks of eight and nine thousand feet, and narrow valleys, whose slopes are covered with silver-thorn and juniper trees and bushes of very strong-scented lavender.

We passed again through Ashaira on our way to Jedda. The direct route from Ashaira to Jedda goes through Mecca and was closed to us as non-Moslems. A slightly longer way by Wadi Fatima, the Darb An Nasara (Christian's Way), which we should



The climate of the Red Sea coast near Jeddah favours the growth, where water is available, of luxuriant palm groves, affording welcome refreshment after the parched plateaux of the interior

normally have taken, was reported to be impassable owing to recent rain. We were obliged, therefore, to make a detour to the north when we left Ashaira on the following morning, in order to strike the Saudi Arabian Mining Syndicate's new road, which lengthened our journey considerably. This road goes through endless miles of high-lying plain strewn with black lava rock known as *harra*, and is cleared of boulders and partly metalled. Tedious though it was, we were grateful for it, as it enabled us to cross this desperately dreary stretch of country with comparative speed. Having risen for some considerable dis-

tance, we dropped from the edge of the plateau by well-graded curves to the Tihama, the coastal plain which lies between the mountains and the Red Sea. As we approached Jedda in the evening we found ourselves once more on sand, which continued almost up to the walls of the city.

Here our desert journey ended. Dressed again as Europeans we entered Jedda, and parted from our pleasant travelling companions with real regret. For my part, I can truthfully say that I would gladly have been setting out once more to begin the whole journey over again.

Mother Yangtse. II

by Lieutenant VISCOUNT KELBURN, R.N.

In our December issue Viscount Kelburn described China's great river highway, with its teeming cities and scenery of unsurpassed grandeur. This month he tells the story of the patient and courageous people to whom the Yangtse, treacherous 'mother', brings both life and death

FISHING on the Yangtse takes many surprising forms, from the man who stands all day dipping a landing-net into the water, to the expert sampan men who drift down with the current, unravelling complicated nets in a highly scientific manner. Fish seem to exist in the smallest puddles and the shallowest marshes, and I have watched boys catching mud-fish in baskets in the flooded paddy-fields.

The dip-net method of fishing seems to be the most popular, and is supremely simple. A wide net is stretched out on a bamboo framework, and pivots in the vertical plane from the shore, where a large boulder, rudely lashed to the framework, supplies the necessary balance for tilting it up and down. The net is lowered into the river, left for a moment, and then raised again in the hope that a passing fish will be seduced into its meshes at the critical moment. I always feel that this simple trap underestimates the intelligence of even the average fish, and one has to be many years in China before one sees anything caught in it. The increased mobility which is given by mounting the dip-net in the bows of a sampan seems to more than double the chances of a successful catch.

A more enterprising method, less commonly seen, is the cormorant fishing. The cormorants are trained like the falcons of old, and have rings round their necks to prevent them swallowing the fish. I have seen a man working with as many as twenty or thirty cormorants. The birds sat perched on the gunwale of his boat, waiting for the order 'Go'. At Ichang there is an old bearded fisherman who uses an otter to drive the fish into his net. It was a nice beast and wore an elaborate

harness round its neck and shoulders. Its performance was disappointing, however, but this may only have been because there were no fish. I was only once privileged to see it in action.

Great rivers, like great men, are arbiters of a country's progress. Their influence, in a greater or lesser degree, the industries, the commerce, and indeed the natural characteristics of peoples. Though tamed by man, and forced to serve his purposes, they are in the end masters of their exploiters. In breaking in a great river, man is limited in his sphere of action: he must be tactful and not rudely exacting, he must study the habits and whims of the river, and always keep on studying them.

The Chinese ride the Yangtse on a very loose rein. Every few years the river remembers its strength and sweeps down in flood, bursting the dykes, destroying villages, threatening the existence of cities, and covering thousands of square miles with water. But the Chinese are fatalistic and very conservative. They accept such things as acts of God. They bury their dead, rebuild their houses, repair their dykes and replant their fields when the river subsides. They have been doing the same thing for three thousand years.

The country people, who inhabit the wide, fertile areas between the cities, express much of the charm of the Yangtse valley with their astounding fatalism, their endless patience, their ready laughter, their boundless ingenuity and their quaint habits and customs. Nobody could really hate the Chinese who has seen elderly gentlemen with the faces of patriarchs taking their caged birds for a walk along the bund at Nanking. Their dragon boat



R. H. S. Rodger

R. H. S. Rodger



Nowhere are the patience and inventiveness of the Chinese better illustrated than in the methods of Yangtse fishermen. Dip-nets of all kinds, elaborately rigged with cranes and shear-legs in the bows of sampans—

—or worked primitively by hand from the shore, with the butt dug into the ground to give greater purchase, are raised and lowered hundreds of times a day, in the hope of ensnaring a passing fish

The cone-shaped skirt—or throw-net is provided with little pockets all round its thirty-foot circumference, in which lead weights are threaded. Flung skilfully, it spreads out on the water like a skirt—

—sinks, and is slowly dragged along the bottom by a cord attached to the apex of the cone and to the wrist, the fish being (sometimes) caught in the pockets of this highly evolved apparatus



R. H. S. Rodger

R. H. S. Rodger



festivals, their theatres, and above all their funerals (for death in the East is no tragedy) are spontaneous, haphazard, gay and decorative. They live in the Middle Ages and like it. Progress and 'go-get' strike no responsive chord in their simple philosophy.

The Chinaman is a master of fundamental mechanics; and the tread-wheel, roughly constructed of wood, is one of his favourite contrivances. With it he pumps water from the river in long wooden troughs to flood his paddy-fields. His whole family will stand in a row, holding on to a horizontal wooden bar, and pedal round gaily and tirelessly until the fields are inundated. The laborious cycle of rice-growing, where every blade is transplanted by hand into another field before harvesting, occupies a family for many months of the year.

Another familiar sight is the old woman grinding corn sitting complacently upon what looks like a kind of stone bicycle, drawn slowly round a circular groove by a water buffalo. The heavy wheels of this ponderous machine effectively crush the ears, which are then laid out on the threshing floor, and beaten with powerful flails, until the chaff is blown to the four winds and only the grain remains.

I have seen oil pressed out of cotton seeds by rigidly securing the bundle, tightly bound, between pieces of scooped-out wood; the pressure being exerted by driving wedges against a vertical post. The wedges were driven in by three small boys, working a battering-ram suspended from the roof. Their unerring accuracy won my admiration, and the crude oil poured out in a steady stream. Nothing in China is wasted. Even night-soil is carried tremendous distances to fertilize the fields.

The chief dangers with which the Yangtse farmer has to contend are climate and floods. Droughts are not infrequent and crops are often ruined by the undependability of the weather. Central China

experiences an extreme form of what in Europe would be called the 'continental climate'. During three or four months in the summer the heat is intense, and disease becomes rife in the cities. For weeks on end the thermometer may not drop below 95° Fahrenheit, night or day, rising about noon to considerably over 100° Fahrenheit. It is not a dry heat, but a damp, limp, sticky heat, which reduces vitality to its lowest ebb and makes every movement an infinite labour. Many are the nights when one lies on deck, all but naked, perspiring continually, exhausted and yet unable to sleep. It is not surprising that during these months tempers become frayed, every persistent sound irritates unendurably, and even the well-meant remarks of one's best friend seem insufferable.

Allied to the heat are the insect pests. Mosquitoes are the most common visitors, but, during the great heat, even they become discouraged and disappear, only to return when the thermometer drops 10°. After a night anchored between ports, the rice-flies were sometimes swept up in heaps off the deck in the morning, and on other occasions crickets would arrive in truly biblical quantities. Hankow breeds a particularly large and fierce-looking fly, and there are other creatures which are more actively dangerous, though fortunately less common.

The winter is not excessively severe. Snow falls heavily at times, but seldom lies for long. For those whose business is in ships the greatest hardship is the north-easterly gale, which blows fiercely and all too frequently, bringing with it raw and bitterly cold weather. Woe betide ships that happen to be steaming down river during one of these storms or lying in those ports which are open to the north-east. The wind, blowing straight up a long reach against the current, can whip up a heavy sea in a few minutes, while rain and sleet reduce visibility to zero.

Chinese men (the women are exception-

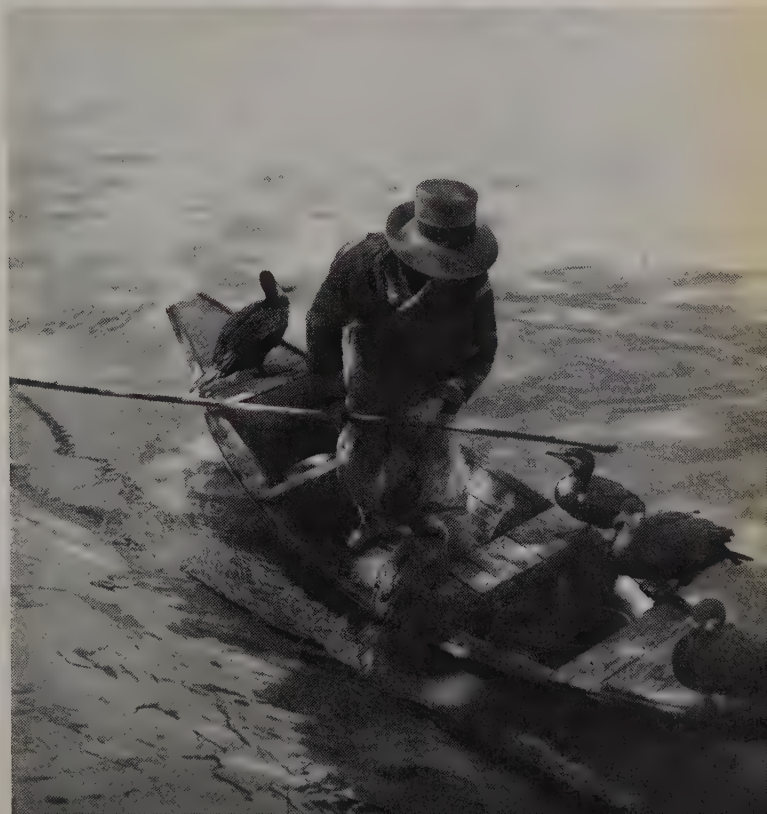


R. H. S. Rodger

The Chinaman's 'boundless ingenuity' leads him not only to invent complicated forms of fishing-net, but to enlist the animal kingdom in his service. One old fisherman at Ichang uses an otter to scare the fish into his net

R. H. S. A

From time immemorial, the voracity of the 'insatiate cormorant' has been cleverly exploited. Trained to come and go at a word, the birds return to their owner with the catch, which they cannot swallow because he has put rings round their necks





R. H. S. Rodger

Monotony has no meaning for the Chinese peasant. For days on end, in broiling heat, a whole family will stand in a row and pedal tirelessly at the tread-wheel, pumping water from the Yangtse to flood their paddy-fields—and apparently enjoy every minute of it

R. H. S. Rodger



ally modest) strip to the waist in the summer and the children run naked. In the winter they sew themselves up in layer upon layer of sacking and cloth. The small children are a very amusing sight. They are so padded out that they become completely amorphous, and the only parts of them that are visible are their mischievous faces and their pink behinds. But the worst time of year in China is the summer, when, added to the heat and the insects, there is the ever-present danger of flood.

Between the average high and low water levels of the Yangtse Kiang there is a range of about forty-five feet. Towns, where the water laps along the edge of the bund in August, stand well above the river in February with perhaps two or three hundred yards of foreshore between.

In July and August come the freshets, caused, some say, by the melting of the snow in Tibet; others, by an intensifica-

tion of rainfall in the upper reaches. During a strong freshet in Chungking the water will rise as much as twenty to thirty feet in twenty-four hours. In the gorges, where the river is constricted, this rise is trebled, and captains of steamers, caught unawares, have reported rises of fifty feet in a night. The highest level ever recorded is two hundred and seventy-five feet above datum. This water debouches itself upon Ichang, and five days later reaches Hankow. By this time its efforts are usually spent, and the rise at Hankow is seldom more than a few feet.

Like the Mississippi, the Yangtse is dyked throughout the lower part of its course. The dykes are sufficiently high and strong to withstand the normal summer freshet, but, if a rise is sustained, it may eventually burst a dyke. This is the beginning of disaster. The water spreads, rapidly covering vast areas. The death-



R. H. S. Rodger

Each blade of rice has to be transplanted by hand. The seedlings, when about 8 inches high, are uprooted from their nursery and planted in a flooded and well-manured paddy-field



R. H. S. Rodger

R. H. S. Rodger



The water buffalo, China's beast of burden, requires a rest every hour or so and takes it in this very sensible fashion

One of his many tasks is to supply power to a ponderous type of flour-mill. To increase the machine's grinding efficiency the miller, usually an old woman, often sits on the beam

roll runs into hundreds of thousands, and many peasants escape death by drowning, only to starve in the weeks which follow. The cities become full of destitute and hungry country folk seeking succour which only a member of the family will give.

Such was the situation when I left Changsha at the end of July 1935. A cloudburst, which swept away a village, and torrential rain had coincided with a freshet from the upper river. Thirty-nine inches of rain fell at Ichang in five days. The Yangtse was in full flood, and the Tung Ting Lake, which acts as a shock absorber, had been filled beyond capacity. Current had almost ceased in the Siang River. From the rich rice areas round the shores of the lake peasants were pouring into the city and many of them lay dying along the bund.

As we steamed down the Siang River, we could see villages which had been thriving and populous on our way up, a bare month before, reduced to a few sodden posts with here and there a crazy roof still balanced above the water. The Tung Ting Lake was like the ocean. Out of this seemingly boundless expanse only three trees and the sturdy pagoda of Payuchi still raised their heads. In the Yangtse itself a sluicing current swept us down past scenes of desolation unthinkable. The water was within two or three feet of the top of the dyke, beyond which was a drop of twenty to twenty-five feet to an uninterrupted sea stretching to the horizon. It gave me the impression of steaming along a railway embankment. All along the top of the dyke pathetic figures clung to life with what seemed a hopeless persistence. Most of them were naked; all were emaciated, wading up to their thighs in water, searching for fish with stranded nets. Rude shelters had been built on this knife-edge, housing perhaps forty people. Thin lines of smoke rose slowly from feeble fires. Sampans, with all that remained of household belongings, passed us from time to time,

with sinewy creatures pulling at the oars. Many cities and villages were flooded, and houses had fallen in or stood denuded like skeletons.

In Hankow itself there was considerable confusion. The bursting of a dyke near Shasi had brought a strong freshet down the Han River, smashing through another dyke at the back of the city. Hankow was an island. Martial law had been proclaimed, and every able-bodied Chinese had been press-ganged into reinforcing the last lines of defence. The gaps along the bund were filled up with wood and bags of earth. Large pumps, housed in huts, worked day and night, trying vainly to clear the drains, which were running back into the houses. Groups of soldiers stood about with fixed bayonets, and trickles of water ran across the roads. Hankow looked like a besieged city, which indeed it was. In the clubs there was much talk of financial disaster. The failure of all crops was having serious repercussions: Chinese banks were falling like ninepins. It would take Hankow two years to recover, men said.



By the end of August the floods were beginning to subside. As each small strip of land became uncovered it was ploughed up and replanted. The recuperative power of the Chinaman is unlimited. His disregard of hardship and his cheerful courage, which is born of fatalism, cannot but command our sincere



'Every few years the river remembers its strength and sweeps down in flood.' Here the water, which has risen 53 feet above low-water level, is 6 feet deep in a Hankow street, while in another part of the city temporary shelters have been built with driftwood



With the bursting of a dyke disaster spreads and the smaller communities, inundated and isolated, suffer heavily



The flood soon reduces populous villages to a few wooden posts and the death-roll mounts with appalling rapidity



By thousands the homeless gather in relief-camps, there to wait until the waters subside and the painful work of reconstruction can begin





R. H. S. Rodger

A thorough-going fatalist, John Chinaman meets the challenge of life with cheerful courage

respect and admiration. It may be ten years before he is again facing ruin and starvation; it may be next year or in five years' time; he cannot tell; so the thought worries him little.

It is indeed not surprising that the simple Yangtse peasant should regard the 'Great River' as something more than a mass of muddy water, rolling by at a rate of millions of tons a minute. How great

a part it has played in the development of his characteristics can never be accurately known, but I am sure it is a very large part. Upon the foreigner also, who has navigated its treacherous channels, the spell is cast. It fills him with a solemn respect and an oriental fatalism, while the drying junk sails, the fishing-nets and the black and white pagodas leave an indelible picture in his mind.



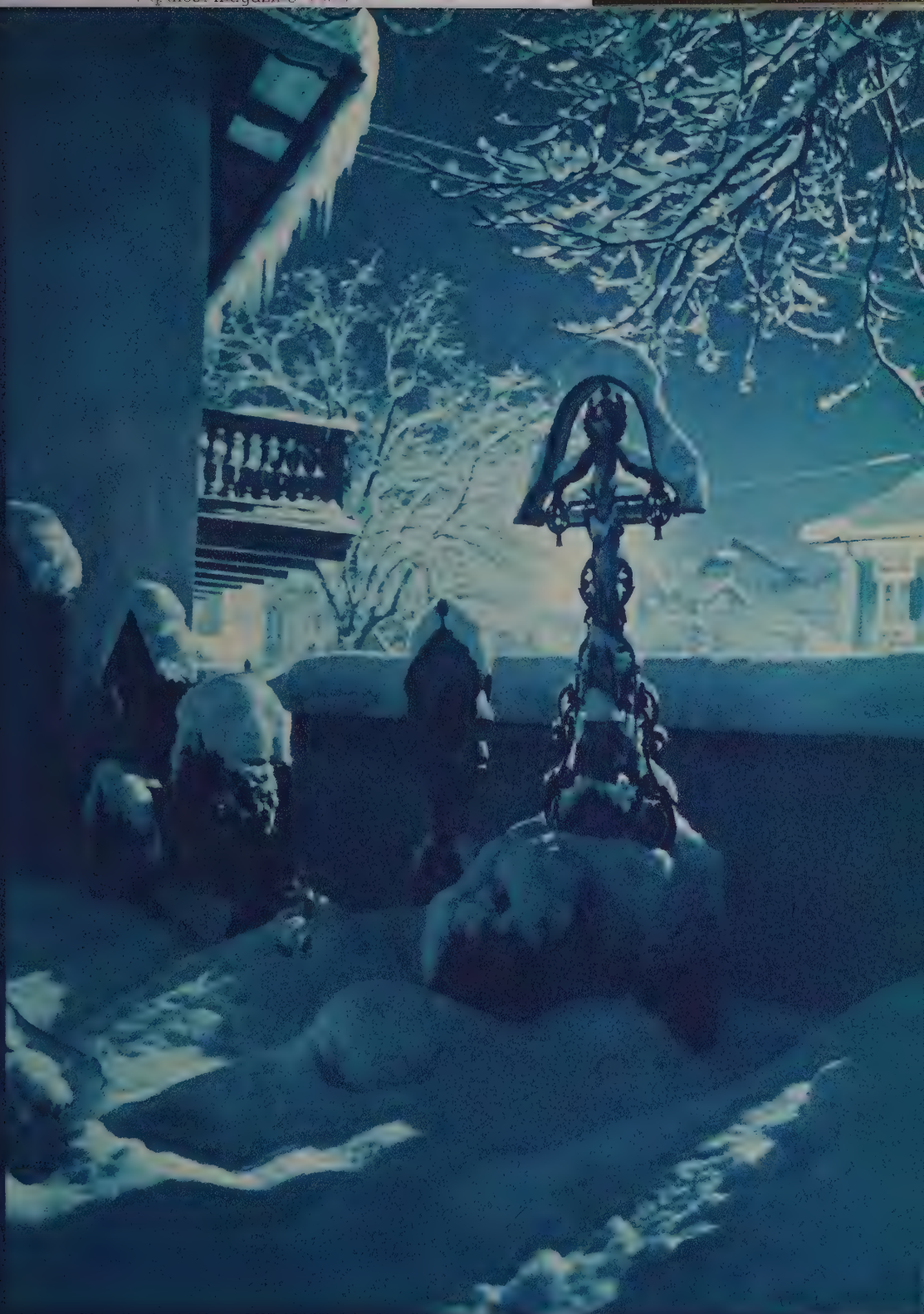
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WINTER MAGIC

'Is winter hideous in a garb like this?'

Cowper

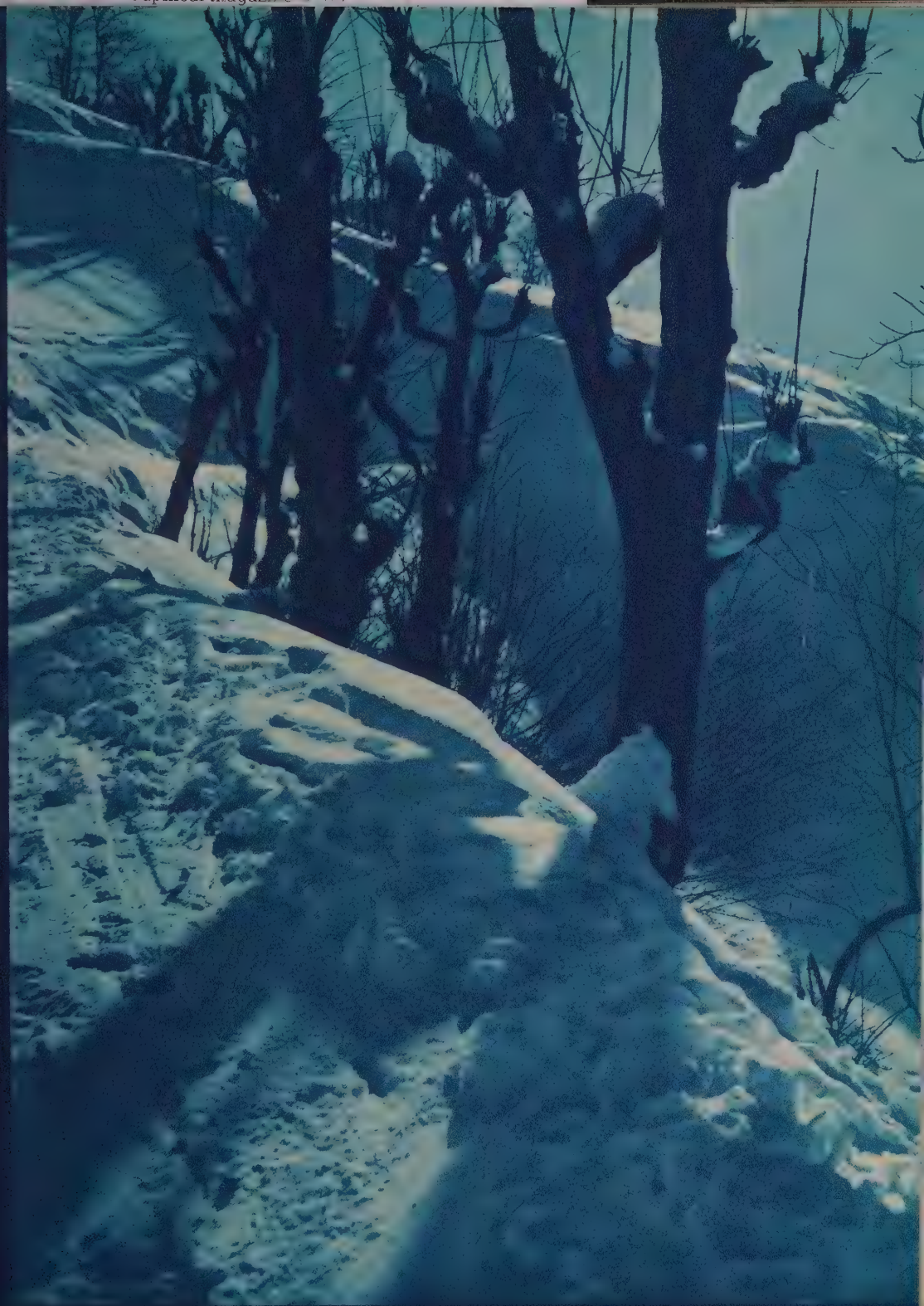














The New German Motor-Roads

by ALAN H. BRODRICK

Dictatorship expresses itself naturally in grandiose public works, of which the German Autobahnen afford a striking example. Democratic governments, subject to critical opposition and accountable for every item of expenditure, cannot afford to burden the exchequer from motives of self-advertisement, still less for the sake of unavowed aims: the grander the scale of communal effort under a democratic system, the more closely must the test of public need be applied. Fascinating, therefore, as the new German motor roads undoubtedly are to a people so motor-conscious as our own, the extent to which they offer a model to be imitated in Great Britain can only be assessed after full consideration of the circumstances in which they were built; and for this purpose Mr Brodrick's article supplies valuable material

THE Germans have undertaken, and are rapidly carrying out, the construction of a great new network of roads. This enterprise is perhaps the most remarkable engineering feat since the cutting of the Panama Canal.

The Romans laid down good roads in all the lands they occupied; that is to say, in western and in parts of central Europe, but only to a small extent in Germany. Great highways linked up Gaul and Spain with Italy; our own country has preserved to this day the traces of the Roman roads; Germany, alone of the great countries sprung from the ruins of the Roman Empire, has no Roman roads except in the Rhine valley. The reason is that Germany lay for the most part outside the *limes* or boundary of the Empire. The Imperial frontier followed the Rhine from near its mouth, took in the Taunus Mountains, ran along the crest of the Black Forest to the source of the Danube and then was one with that river to its mouth, save for Trajan's extension over what is now Rumania. Vienna was part of the Empire—Marcus Aurelius died there—Cologne, Coblenz and Trier are ancient Roman towns, but most of Germany was, in the eyes of the Romans, a savage waste of forest, marsh and moor inhabited by wild and uncivilizable barbarians.

The Roman roads in Britain fell into ruin in the 5th and 6th centuries, and all over

Europe with the collapse of the Empire land communications became more and more difficult. The political structure which arose on the site of the *Imperium* was not favourable either to road-making or to road-maintaining, since for these a strong central authority is necessary.

Even in the more advanced of the new 'national' states the secret of efficient road construction was not rediscovered until nearly the end of the 18th century. How little progress had been made by then in England, readers of Mr Mais's article in *The Geographical Magazine* for May 1937 will recollect. Indeed, we may take it that both in England and elsewhere, until 150 years ago, roads were little better than morasses of mud in the rainy season and deserts of dust in the summer months. In western Europe men had not even the severe winters of the east, where sledges formed a fairly comfortable means of transport for half the year.

Railway building in the 19th century diverted men's attention from roads and, although France kept up her admirable national highways which had been perfected by Napoleon, it was the introduction of motor-driven vehicles at the turn of the century which made men realize the capital importance of good roads. England had always lagged far behind France in the development of a network of good roads; for whereas in that country the authority was



Blau Beyer. Ostmark

Gauverlag Bayer. Ostmark



With no level-crossings to diminish speed or safety, the German Reichsautobahnen plunge, uninterrupted, from one point of importance to another, ignoring the old road-system

The first stage in constructing a new autobahn: as though ruled on a drawing-board, the line is traced across country with Roman boldness

highly centralized, in England each parish was responsible for its own bit of highway. Until 1937, in fact, there was no English national road system. A similar division of authority hindered the construction of highways in Germany.

The explanation of much that strikes other Europeans as so strange and unfamiliar in German manners and ways of thought and life must be sought in the history of the old German Empire—the Holy Roman Empire of the German Nation. The elective nature of the monarchy of the mediaeval emperors favoured the growth of a host of petty states whose autonomy became more real as the authority of the Emperor waned. Even after the Treaty of Westphalia in the middle of the 17th century Germany was made up of more than 300 separate states many of which were not more than a few miles square. The rise of Prussia and the

Wars which followed on the accession of Maria Teresa to the hereditary lands of the Habsburgs, destroyed the last vestiges of imperial power over the rest of Germany. The Emperor was a shadowy figure in Vienna who was rarely, if ever, seen in non-Habsburg Germany except at his coronation. Germany was thus deprived of a cultural, moral and political centre during the elaboration of modern manners in the 18th century. The German remained a provincial, his manners set by a petty court and his interests bounded by the limits of his native state, where he lived in conditions of almost feudal dependence, without any tradition of liberty, without any opportunity of forming political judgments or of acquiring experience of men and of affairs on a larger stage.

The Thirty Years' War had split the country in twain, had decimated the



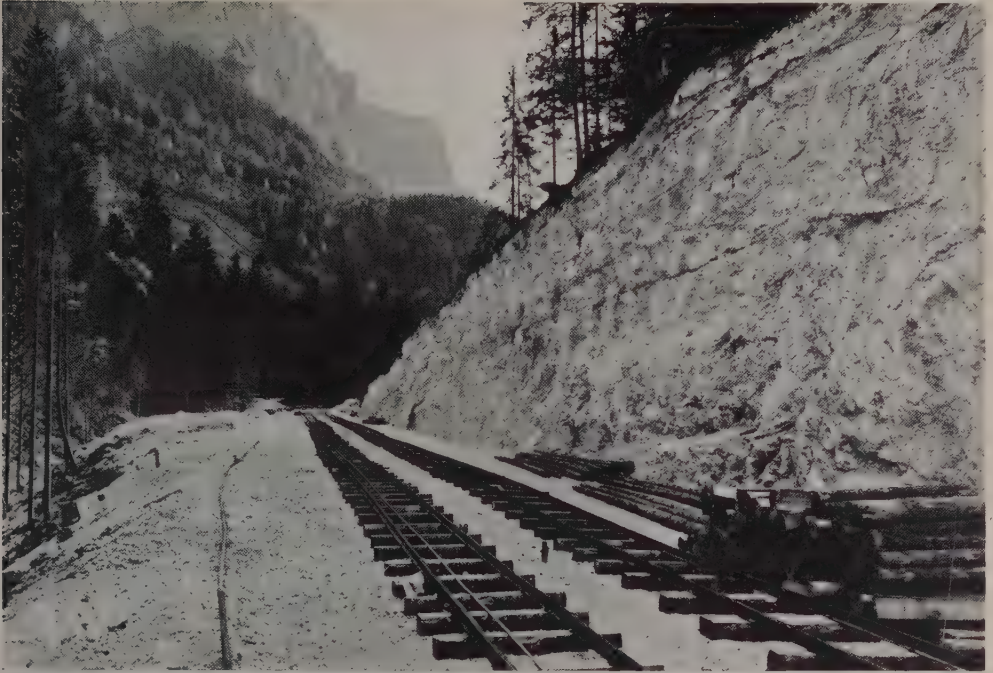
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Long stretches are entrusted to individual contractors, who can thus lower the cost per mile through large-scale working and the use of machinery. Heavy material is moved on temporary railways



Fifty thousand trucks, it is estimated, are being used in preparatory earth-work

Dorien Leigh



Gauverlag Bayer, Ostmark

From the plains of the Baltic seaboard to the passes of the Bavarian Alps, 'the most remarkable engineering feat since the cutting of the Panama Canal' is being pursued with German thoroughness

population, ruined the countryside, almost wiped out the lower nobility and gentry and left Germany one of the poorest lands in Europe.

The Napoleonic wars paved the way for the hegemony of Prussia. Napoleon in his attempt to break the power of Austria made a national renaissance inevitable. This tardy awakening took place under Prussian leadership. A hard-bitten people which wrested a miserable living from a barren and sandy soil had been moulded by the genius of a few men into the most formidable military instrument the world had seen. The German army has afforded the only moral training, the only code of manners which has been applied to the German people as a whole. The army is for Germany a substitute on the moral and spiritual plane for those unifying elements which in our own life have been supplied by an age-old political tradition, a heritage

of success and liberty, the public-school system, the British monarchy and the Navy.

Napoleon made modern Germany just as his successors, by their unskilful handling of the defeated German nation after 1918, made the Third Reich.

The present German régime is essentially a unifying one. The number of states has been reduced and the few remaining local privileges and autonomies are fast disappearing. Up to quite recently German roads were constructed and maintained by the different states. Before the war and even until the post-war Weimar constitution was swept away by the Nazis, 'states' rights', to borrow an American phrase, were jealously guarded and the non-Prussian lands of the Confederacy were unwilling to surrender a parcel of their autonomy. All the essential phases of national activity were under the control of

the Reich, that is to say of Prussia: the postal system, the waterways, the foreign representation of the Empire, the navy, the army and the railways. Roads were not considered to be essential by the General Staff as were the railways. The armies of today are, however, not only mechanized but motorized, and in the future much less reliance will be placed upon railway communications than upon good roads.

Under the Second German Empire there was no central body for the management of the roads. The *Reichsbahn* (State railway) company, however, worked in the closest connection with the General Staff, and the far-reaching net of German railway lines was laid down as much in response to the demands of the army for strategical lines of communication as in the interest of the economic and commercial needs of the country.

As late as 1931 you could find in Ger-

many the greatest variety both of road width and of road surface, and that in a small area. Between Brunswick and Hanover the road varied in breadth from 4 metres to 6 and within a few miles the surface changed from irregular stone setts to bituminous covers and from water-bound macadam to cement concrete and small stone setts. There was no uniform road design and no uniform technical standard. The roads were, however, on the whole excellent as far as they went, and all pre-war motorists who crossed from Germany into Austria will remember the difference in surface condition between the two countries.

The Third Reich has not only undertaken the construction of a vast network of *Autobahnen* (roads designed and reserved for motor traffic) but the whole of the road administration has been reorganized. The responsibility for all roads throughout Germany lies upon the Inspector-General



Volk und Reich

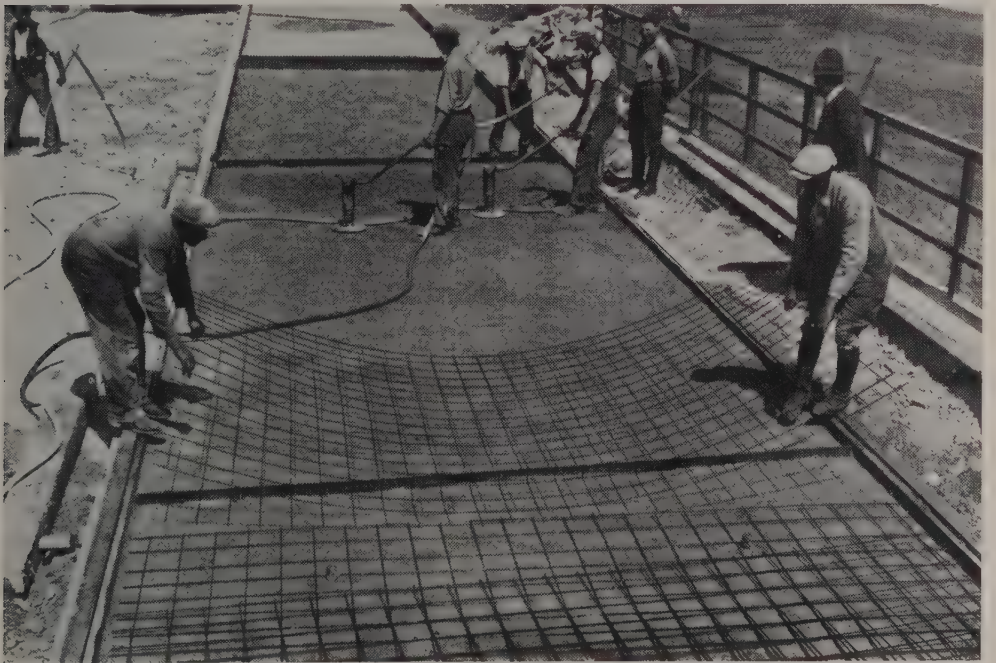
Great attention is paid to subsoil and foundations: under each of the twin one-way concrete tracks of which every autobahn consists, the road-bed of gravel and sand is heavily compressed



Gauverlag Bayer. Ostmark

Huge machines, on rails stretching the whole width of the track, mix and lay the concrete, in slabs from 8 to 10 inches thick, upon a layer of paper placed over the road-bed. Steel mesh reinforcement enables the slabs to expand slightly without cracking under the influence of changes of temperature

Gauverlag Bayer. Ostmark





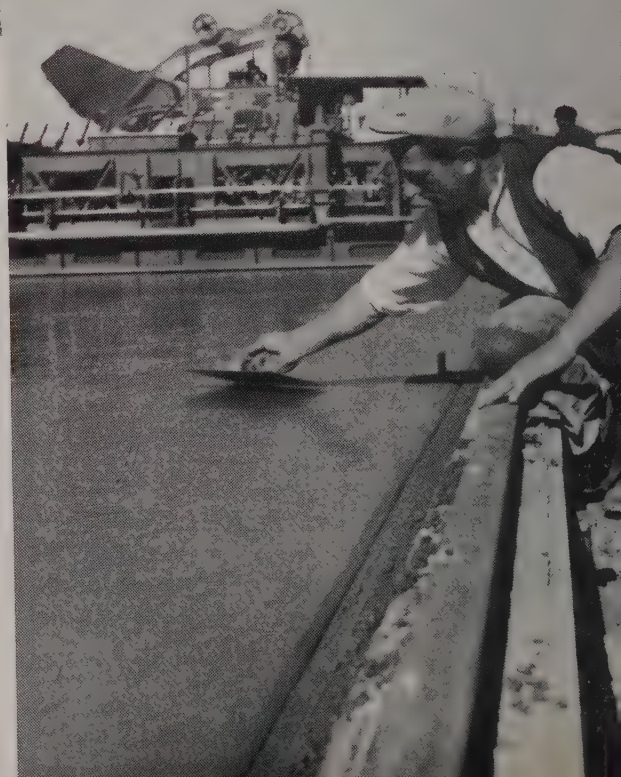
Lest the concrete should dry too quickly, or its surface be damaged by rain, it is protected with awnings of hessian stretched on frames as soon as it is laid

Gauverlag Bayer, Ostmark



Gauverlag Bayer, Ostmark

Finally, differences greater than 4 millimetres over a horizontal plane of 4 metres are removed by finishing machines, and the last delicate touches necessary to render the surface perfectly even are supplied by the human hand



—at the present time Dr Todt—who reports directly to Herr Hitler himself. Existing roads have been divided into three classes. 'Reich roads', roughly corresponding to the French *routes nationales*, and first- and second-class highways.

The autobahnen are, however, something quite new.

In June 1933 the *Reichsautobahnen* company was set up with a nominal capital of 50 million marks. This undertaking is a subsidiary of the German State Railways and is, of course, in no sense a public company working with private capital. It is significant that the whole thing is being run by railway engineers and not by civil engineers. The railways, it cannot be overstressed, are for their general policy under the control of the General

Staff. The new company has a monopoly for everything relating to the new highways from building roadhouses to the advertising of what has been achieved.

A network of autobahnen 4500 miles in length is under construction. Its plan is usually described as a 'grid', consisting of two main lines running from north to south: Hamburg-Basle and Stettin-Salzburg; and four from west to east: Hamburg-Königsberg, Cologne-Berlin, Cologne-Breslau and Karlsruhe-Munich. But other important lines are planned, notably that from Cologne to Passau, as well as roads approaching and running parallel to certain frontiers; while Berlin is surrounded by a great ring and is the centre of a radial system linked with the 'grid'.



Stanford, London.



rien Leigh

Lily Solmsen

Immense numbers of bridges have been built to carry existing roads over the autobahnen. (Above) A typical viaduct near Frankfurt-am-Main: the dark asphalt-covered outer verge of the autobahn is clearly shown



(Right) Two viaducts crossing the Berlin-Stettin autobahn



orian Leigh

Gauverlag Bayer. Ostmark



(Above) The autobahn enters Mannheim in grand style. Note the longitudinal joint, with transverse joints at right angles. Dowel-pins between the concrete slabs prevent unequal settlement at the transverse joints

(Left) Bridges for foot-passengers help to eliminate interruption of traffic

The new highways are designed to avoid all towns and villages, passing large cities at a distance of some miles; and though they are connected with these and with the more important roads that they cross, they ignore the old road system, which is left intact to carry local traffic. All road crossings are by bridge, and junctions are so constructed as to compel motors to enter the autobahn in the direction of the traffic stream.

By the beginning of September 1937, 955 miles of autobahnen were open to traffic, some stretches being over 120 miles in length. A further 1125 miles were under construction, besides 1155 miles traced out. As at present planned, it is intended to open an additional minimum of 650 miles to traffic each year.

The plans prepared by the office of the Inspector-General have to be passed by the local police authorities. Land for the highways is theoretically acquired through purchase in the ordinary way, but as the road authorities fix the price and in the event of the owners' refusal to sell have the right to expropriate, it is obvious that no great difficulties are met with in getting what land is wanted as it is wanted.

No figures are officially published as to the cost of the autobahnen, and such estimates as that of £31,250,000 for the first 1250 miles, given by one member of the British delegation which recently inspected them, may be treated with some reserve, in view of the numerous unknown factors involved and of the difficulty of making accurate financial comparisons between Germany and Britain. (Credit inflation within the Reich has been estimated at as much as 30,000,000,000 marks.) The company's nominal capital affords, of course, no indication of what is actually being spent.

The standard autobahn consists of two parallel one-way tracks, each about 24 feet wide, separated by a central grass strip varying in width from 11 to 16 feet. This strip is sometimes planted with a hedge of

trees or shrubs which serves to prevent dazzle from headlights and also, to some extent, masks the roads from the air. About 90 per cent of the roads have concrete surfaces, though a few lengths are surfaced with stone setts or bituminous macadam. The tracks are edged on both sides with concrete verges coloured black to give definition.

Curves, gradients and banking have been carefully worked out in relation to each other and to the contours of the country traversed; visibility and speed (there is no speed limit on the autobahnen) being also important considerations in determining the layout of any given sector. Standard gradients and curves are prescribed for different types of country, the maximum gradient in lowland regions being 4 per cent and in mountainous districts 8 per cent, with corresponding curve radii of 2200 and 440 yards respectively.

Much attention has been paid to the question of subsoil, in regard to which (as noted in Mr Mais's above-mentioned article) divergent opinions were held by our two greatest road-builders of the past, Telford and McAdam. Sir Alexander Gibb, in his *Story of Telford*, has well summed up the differences in outlook between the two men:

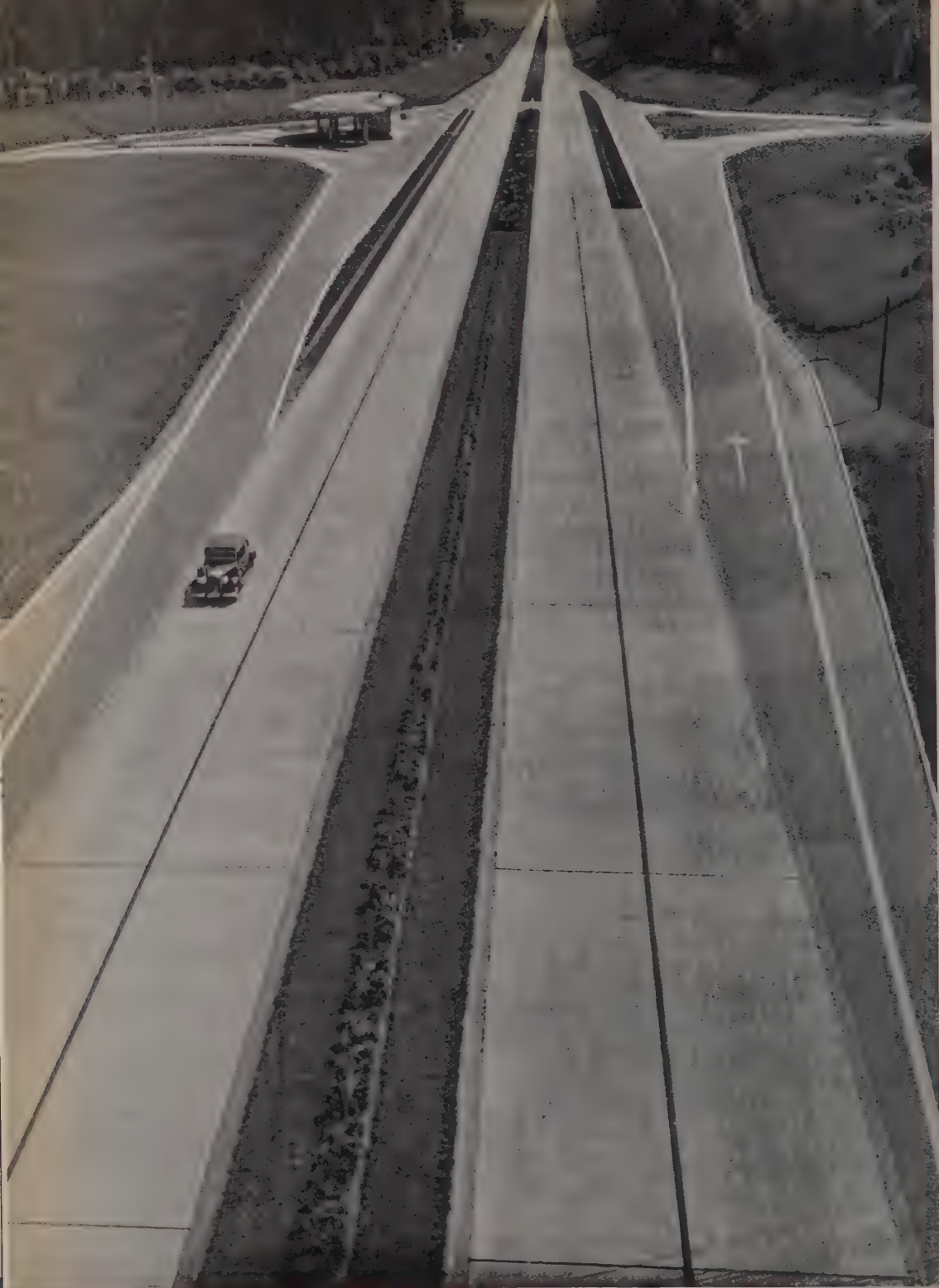
No one could deny the vast improvements introduced by McAdam or the extraordinary effect his work and example had. But his roads would be and have been totally unfit to sustain modern traffic. . . . Telford's roads were perhaps beyond the requirements of the day. They were too costly except for mail routes. But in principle they were little different from the latest practice in road-making for the heaviest traffic.

Proper treatment of subsoil and foundation is, indeed, the essence of modern road construction. In 1933 the Building Departments of the various German states and of the Prussian provinces were instructed to collect soil specimens from roads which were classed as 'good' and 'bad' near



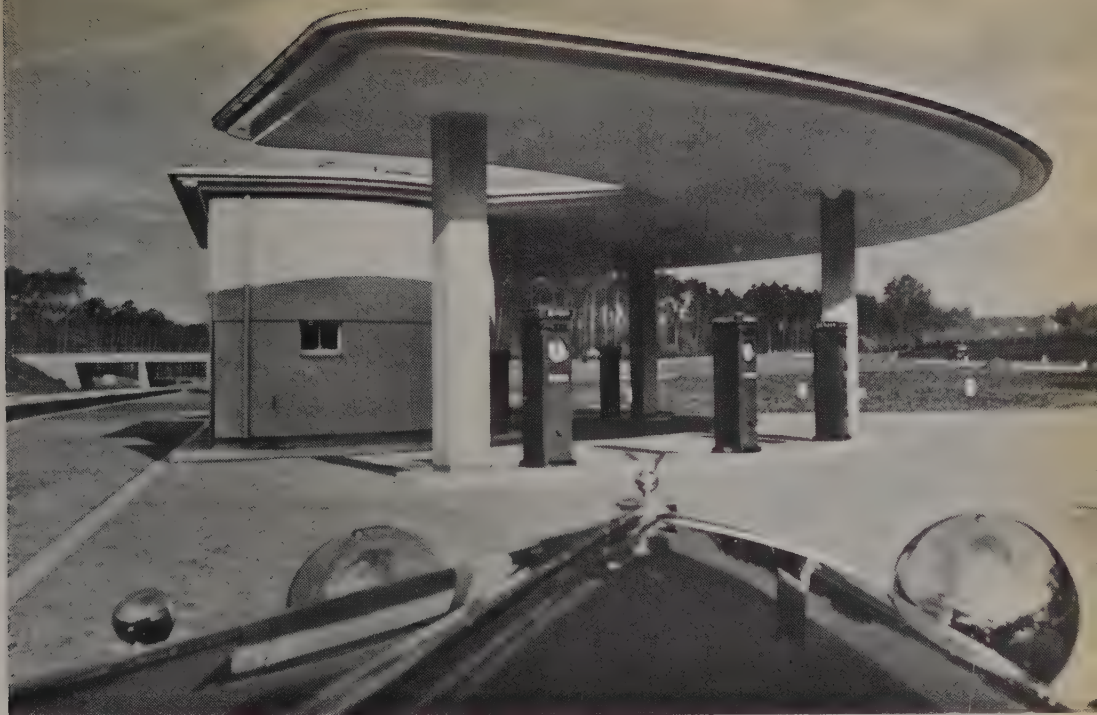
Illustrations-Verlag Wissmann

An encounter on the autobahn: two pedestrians who got bored with looking for a foot-bridge



Petrol filling-stations, standing back from the autobahn, are approached by specially-constructed drives

Dorien Leigh



Gauverlag Bayer, Ost

(Above) The filling-stations are a monopoly of the government-controlled Reichsautobahnen company. Built to a specific design, they are simple, unobtrusive and free from disfiguring advertisements.

(Below) Simplicity of design also distinguishes such bridges as that over the Inn south-east of Munich

Dorien Leigh



the line of the future autobahnen. These specimens were analysed by the Society for Soil Mechanics Research. In addition to direct testing methods, dynamic tests are also applied. A vibrator is used to send waves through the soil while seismographs register the oscillations. The ravages of frost on road surfaces have hitherto been regarded as unavoidable, but the new methods employed in Germany reduce these risks to a minimum. Upper strata are replaced by sand and gravel and longitudinal drainage and interspersed layers are used to protect against upheavals due to freezing.

The filling material of sand and gravel is heavily compressed in thin layers. The soft soil in moors or swampy regions is removed by blasting, and the sand-fill is then sunk directly onto strata judged to be of sufficient carrying capacity.

Upon a road-bed thus carefully prepared the concrete is laid by machines carried on rails parallel to the roadway. The thickness of the slabs is generally about 20 centimetres, but this is increased to 25 centimetres where bad subsoil or high embankments make it seem necessary. To obviate cracking, each track has a longitudinal joint and transverse ones at right angles.

The concrete pavements are laid down by two methods: (1) The two-layer method in which the base course amounts to two-thirds of the total thickness (13 to 15 centimetres) and consists of gravel concrete; the upper course amounting to one-third of the total thickness (5 to 7 centimetres) and being formed with broken stone-chippings; (2) The one-layer method in which crushed stone is used throughout. In the two-layer method steel mesh reinforcement is placed between the two courses to prevent the widening of any cracks. In the one-layer method the mesh reinforcement is placed with bars along the edges of each slab. The outer shoulders are made strong enough to carry full wheel-loads and are designed to prevent rain-water from penetrating at the

edge of the carriage-way and thus weakening the subsoil.

The concrete courses are not laid directly onto the subsoil. In all cases a layer of paper weighing 150 to 200 grammes per square metre is spread first, and this ensures that the bottom of the concrete slabs sets evenly. Friction with the subsoil is reduced to a minimum and the paper prevents the absorption by the soil of water from the concrete. The consolidation of the concrete is performed by machines driven by compressed air or electricity.

After the concrete has been laid down it is protected by tents from too-rapid drying by wind or sun and from deterioration of its surface, owing to rain. As soon as the concrete has hardened the tents are moved forwards, the surface is covered with wet sand, wet canvas and mats for from 3 to 4 weeks and during this period the whole is kept damp.

Great care is taken to ensure the evenness of the finished surface. Differences greater than 4 millimetres over a horizontal plane of 4 metres are removed by shaping and grinding. Even the 4 millimetres are, however, only allowed when the road is not dead flat.

The accesses, bifurcations and crossings are especially interesting. These are all designed to eliminate the intersection of traffic at road-level. In the case of feeder-roads giving access to the autobahnen, a bridge carries cross-traffic from the feeder-road over the autobahn and down to the latter by means of long ramps. As cars leaving the autobahnen travel faster than those joining them the ramps are not equal. Those for leaving-cars have a radius of curvature of not less than 150 feet, while those for cars joining the autobahnen have a radius as short as 75 feet. The resultant type of junction somewhat resembles a trumpet in shape.

Where one autobahn branches off from another, the type of junction depends on the flow of traffic. For cases where this is

nearly equal in both branches, an elaborate triangular system has been evolved. Up to now only one triangular bifurcation has been constructed, near Mannheim. When, however, there is very heavy traffic mostly in one direction the trumpet system is used. This is both less expensive and less complicated.

Where two autobahnen cross, only two types of crossing structures are being employed: the 'dual eight', a scheme for eliminating crossings at road-level in the form of a four-leaf clover (at Schkeuditz near Leipzig and at Hermsdorf in Thuringia) and the 'roundabout' (at Leverkus near Cologne).

Such are the main physical characteristics of the autobahnen. There can be no doubt that, in their design and construction, military considerations have played an important part. The roads which follow the frontiers lie well back from them so as to be beyond the range of artillery fire. Where the autobahnen cross railway lines there are always cutouts and bypasses so that should the rails be destroyed or the bridges blown up cars can leave the highways and join them again further on without loss of time.

The autobahn network may possibly be completed by the end of 1940, for more and more men will be transferred to road-work as the rearmament of Germany progresses towards its completion. These great roads are, indeed, as much an essential part of the rearmament programme as is the motorization of the army; for they are absolutely necessary if the new army is to be the instrument for rapid and decisive action which the present-day rulers of Germany wish to make it. The opening day of the Cologne-Düsseldorf section showed their great carrying capacity: an average of 23 cars a minute. On this basis, and on the supposition that the new army transport lorries are used, it may be calculated that as many as 70,000 men can be transported per hour in each direction.



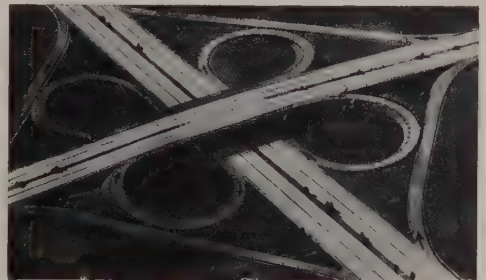
A secondary road crossing the autobahn



A one-sided junction—the 'trumpet' type



The triangular bifurcation near Mannheim



Two autobahnen cross: the 'four-leaf clover'

German Railways Bureau

It would, however, be wrong to imagine that military advantages are the only ones which Germany will derive from her splendid new highway system. The autobahnen will certainly have afforded a considerable amount of employment during the period of their construction; indeed it is asserted that 35 per cent of the sums expended would otherwise have had to be paid for unemployment relief. They are also expected to stimulate the manufacture of motor cars in Germany and to encourage tourist traffic. There is official authority for the calculation that from 25 to 30 per cent of the cost will return to the Treasury in the form of increased revenues from the taxation of undertakings whose business has been improved. Thus one arrives at the pleasant view that less than 40 per cent of the construction cost constitutes, in reality, additional expenditure.

This optimistic estimate appears to have made an impression on some of the 224 British people, including 60 members of both Houses of Parliament and numerous county road surveyors and chairmen of road committees, who recently inspected the autobahnen as the guests of Dr Todt. Others noted in particular the statement that the accident rate per vehicle had been decreased by 83 per cent: a result which was somewhat discounted by the observation that the traffic was extremely light. "One passed over the autobahnen for miles", wrote the Member for Perth, "without meeting another vehicle." The same observer noted the sparseness of population in the wide stretches of rural Germany traversed by the new roads; while another Scot, the county surveyor for Ayrshire, reminded a conference of engineers that there are nearly four times as many cars per head of the population in Britain as in Germany, and expressed the opinion that "the motor-roads of Germany are far in excess of present requirements, or indeed the requirements of many years to come".

Nevertheless, there were no doubt many members of the delegation who shared the view forcibly expressed by Lord Wolmer in an article in *The Times*, that the autobahnen offer an example which Great Britain might profitably follow. He quoted figures tending to show that the new roads are costing the German Government £35,000 a mile all told, including bridges and the price of land; that similar roads in England might cost £40,000 or even £50,000 a mile; but that even so the policy of constructing them would be less expensive than the present official policy of widening our existing main roads, estimated as costing on an average £60,000 a mile.

He and others have urged that, by draining away through-traffic from the existing roads, such motorways would cut at the root of the road-accident problem; since on the one hand they would render the fast motor traffic safer in itself, by means of their wide curves and specially constructed junctions, as well as through the effective separation of movement in different directions and the prohibition of parking elsewhere than at one of the special parking bays; while on the other hand they would segregate this fast through-traffic from the slow local mixed traffic—the horse-drawn vehicles and the cyclists and pedestrians whose presence on the same road as motor cars is the most common cause of accidents.

Finally, it is held that our existing main roads, however widened and improved, being open to traffic of all kinds will always tend to attract the builder and extend the areas of urban congestion if not of actual 'ribbon development'; whereas motorways on the German model would help to preserve the open countryside from sporadic building and would render unnecessary the destruction of old houses and wayside trees in the process of widening existing roads.

Spring is Coming!

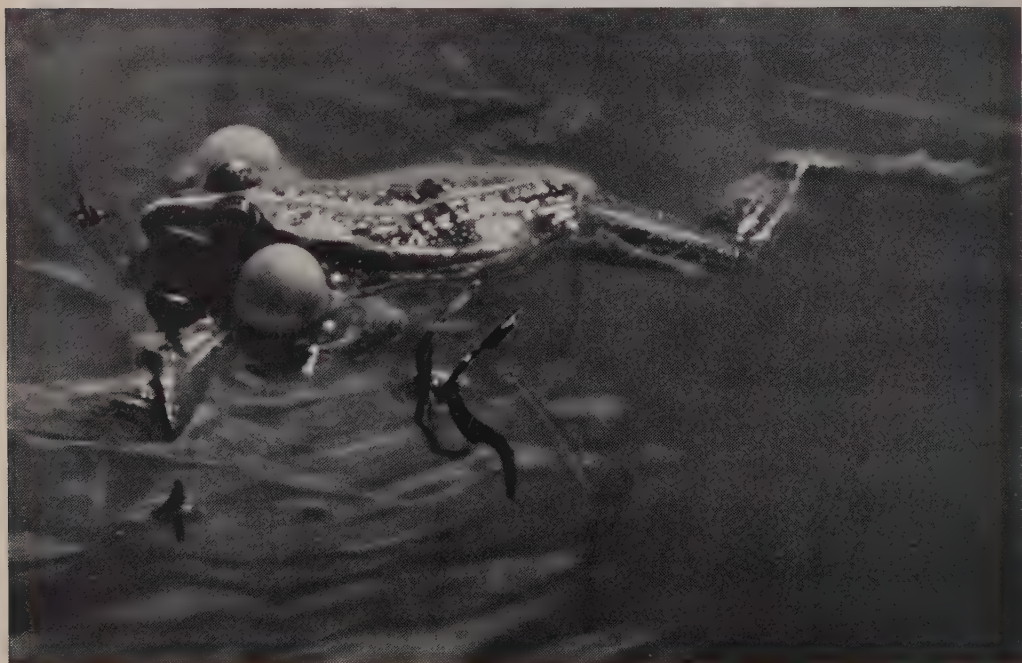
Photographs by Włodzimierz Puchalski

Though they (like other wise animals) are still hibernating, the frogs of the northern hemisphere will soon begin to show signs of life. Even before you and I feel that 'spring is in the air', the surface of innumerable ponds and marshes will be stirring with excitement as the frog population—already large enough, it would seem, to satisfy Batrachian nationalism—obeys the call of destiny





The love-song. Batrachian folk-music is based on the balloon, worn by the land-dweller beneath the chin, a fashion as croak-conducive as—



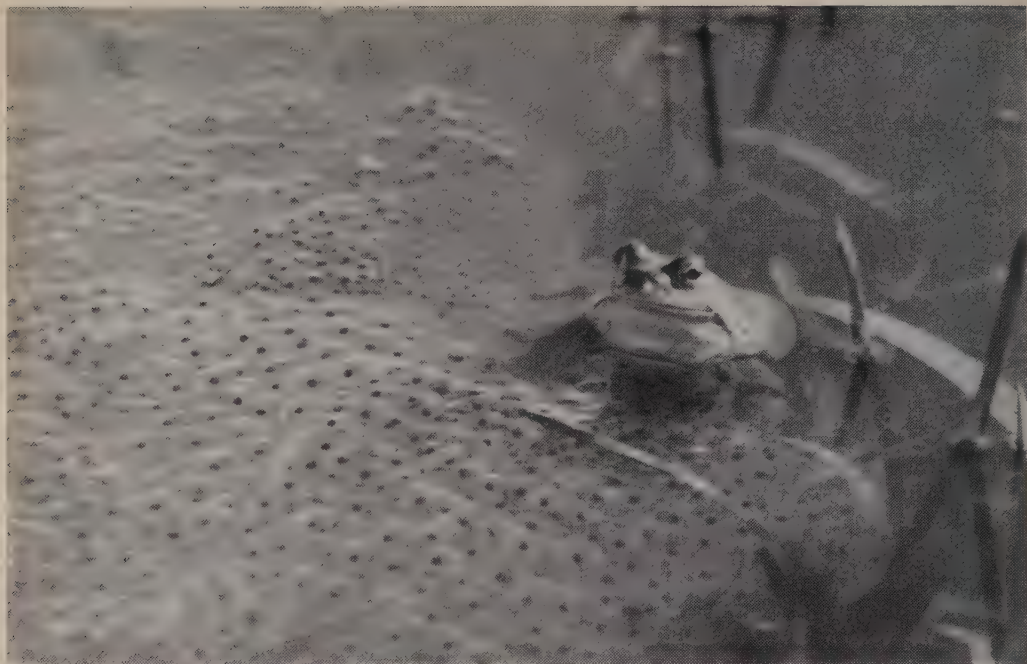
—the arrangement at the sides of the head favoured by nautical members of the race



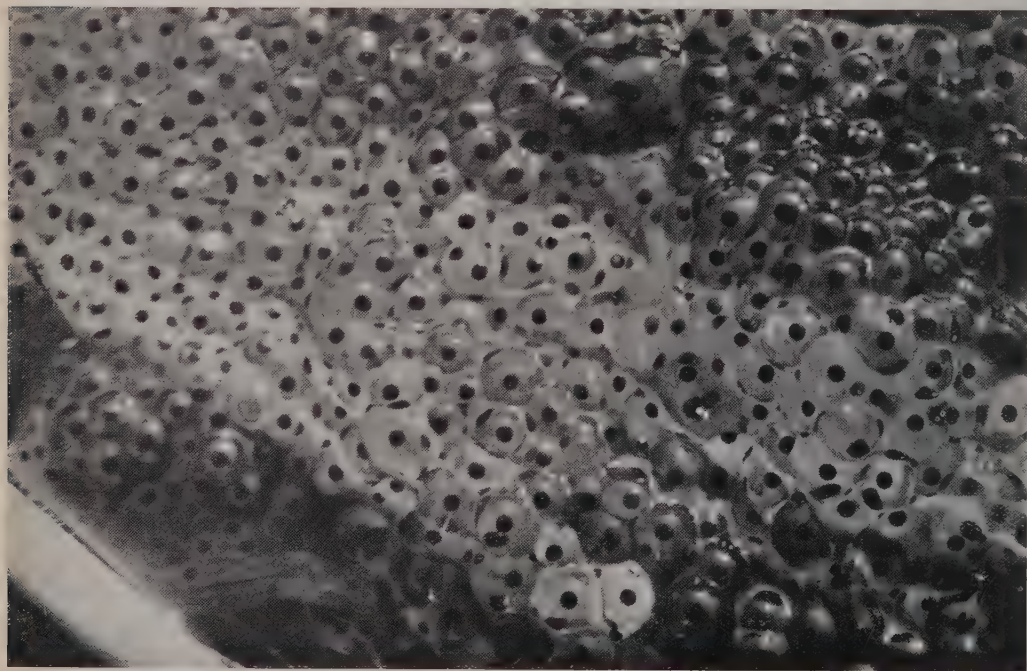
The rendezvous. Romance (the deep race-sentiment of Batrachian masculinity, no superficial Hollywood emotion) fills the heart of this expectant lover—



—soon to be joined beneath the water-lily by his beloved, a worthy race-mate



*Motherhood. In her happy smile you can sense the true inward satisfaction of the female frog.
When every mother can lay—*



—as many as 10,000 eggs, the racial future is assured. Naturally, not all survive . . .

Faeroe Scene

by R. M. LOCKLEY

Despite many grave physical disadvantages—precipitous coastlines, mountainous interiors, inhospitable climate and an isolated position—the volcanic group of islands known as the Faeroes supports a flourishing population. Numbering 15,200 in 1900, the population today is 25,700. Although the islands have an area less than that of Greater London they provide excellent grazing for over 70,000 sheep—Faeroes means ‘sheep islands’. Early in the 11th century Norway took possession of the Faeroes, which in 1386 were transferred to Denmark. To the kindness and sturdy independence of the Faerish character, Mr Lockley’s sketch bears witness

IN Thorshavn, Faeroe’s gaily coloured little capital, lives Sofus Paulsen, chauffeur at the hospital there. But the heart of Sofus lies in the music, not of the dusty ‘auto-bile’, but of the surf washing the precipices of the fiords, in the patches of upward-sweeping greensward that betray the lonely farms under the hanging mountains of the nether islands, where he had been brought up. One glorious evening upon the fiords in a four-oar Viking boat Sofus, who was on holiday, opened his heart to my friend Ellis and me.

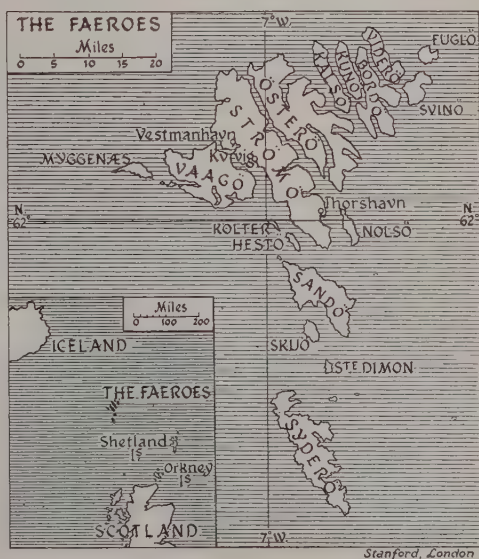
We had met in the house of his brother-in-law on Kolter, a little farm at the bottom of a thousand-foot cliff. The eternal cloud-cap of the Faeroes rolled forbiddingly around the brow of this mountain, but, across the fiord, whither our expedition was bound, the sun gleamed between mists upon the isolated one-farm hamlets of Nordredal and Sydredal (North and South Dales) on the main island of Strömö opposite.

Sofus, absurdly dressed in modern clothes, wished to visit his people at Sydredal and to shoot seals in caves known in boyhood; his brother-in-law Carl, handsomely attired in the practical Faerish silver-buttoned coat, knee-breeches, and striped peakless cap, having provided the motor boat. Both had guns, Sofus a rifle for the seals, Carl a gun to use on cormorants. Quite a warlike expedition, but the men of Faeroe are hunters first and must live by meat, since vegetable food is difficult to produce.

Sofus could speak a little English. As we pushed out into the fiord, which is often

the only high-road in Faeroe, Sofus looked up at the stealing mists rolling around the crown of the mountain above his Sydredal home. He said emphatically, as he read the signs of good weather in the drift of the low clouds: “Fine weather now, fine, fine weather! We’ll catch the seals all right!”

His eyes darted about him with intense eagerness, as if he would have loved to have seen a seal at that moment. He was no longer a chauffeur, he was the boy who had stalked seals and sea-birds in this self-same fiord, and taken part in the madly exciting *Grindadrap* (slaughter of pilot-whales) on Vaagö’s silver sand at the north end of the fiord. He had forgotten his expanding waistline, his incongruous





David Buxton

Between the Faeroes, rising sometimes over 2500 feet sheer from the sea, the tidal currents race at 7 to 8 knots, calling for the exercise of supreme seamanship

clothes, and that he had not used a rifle for many years. His tongue ran on rapidly.

Now he was telling us of the dramas and tragedies which the fiord had witnessed, of a story (not new to us) of how the men of Hestö had disappeared at sea on a perfectly calm day. A second boat had rowed out to search for the missing boat, and it too had disappeared.

"... Second boat sure to find first boat, bring him safe home—wives, mothers troubled—away goes second boat, full of heart. Long time away—long, long time. Ah! so long—first boat, second boat—him never come back, nothing come back to Hest! Never, never!"

Sofus shook his head to and fro grimly, and looked a little more anxiously at the white weaving of the mid-fiord current, into which we were now plunging. The sharp-prowed Viking boat carved a pass-

age in little leaps, throwing the spray in long curves away from us. For the next half-hour Sofus's opinion of the weather seemed to have changed. While young Carl sat with an unchanging smile on his face, Sofus muttered much in Faerish, and a little for our benefit in English. We caught the words, "Plenty wind—plenty *strom* [current], sometimes wind make water spout—no good, small boat!"

Such is the way of the wind in these fiords, which lie under mountains one to two thousand feet high, that the closer we drew to the windward shore, the fiercer the down-draughts blew, until, near the seal caves, the tops of the ripples were torn off, to race across the dark blue water like powdered snow.

Carl now took the tiller-lines leading to the handsome, curving Viking rudder which every Faerish boat possesses. Sofus took his rifle and posted himself in the bow.



David Buxton

Two villages on the principal island of Strömö: Kvivig and Vestmanhavn. The drying of fish is an important occupation. After being split the fish are spread out on stones during the day and are stacked at night or whenever rain threatens. Drying takes about two months



David Buxton

But no seals appeared, and even when we were bidden to row, with the utmost silence and caution, into the sun-mirrored halls of the west-facing caves we heard but one distant splash far in the inner darkness.

Sofus sighed with disappointment. He was burning to fire a shot, with itching finger on the trigger. He whispered anxiously to Carl.

At last he laid the loaded rifle at his feet, and declared it was time to eat. Carl opened the supper basket. The boat circled idly in the wheel of the counter-current under the arches of the caves. Sofus resumed the saga of the men of Faeroe: . . . One day all the men of a village in the Norderöer rushed out to sea to take advantage of a shoal of fish which had been sighted in the open sea at the mouth of Kunö Fiord. A violent storm suddenly swept down from the mountains. When it lifted no boats could be seen. In terror the helpless women and children of the village ran over the mountain top to take refuge in the village in the next fiord. They never had the courage to return to their homes, which lie derelict to this day.

As Sofus spoke, Carl, who could understand but not speak English, still smiled out of his pleasure at being with us, scarcely heeding the story which Sofus unfolded to us. Such incidents were but part of the heroic romance which he, as an islander, lived so freely (but without being conscious of so living). Carl himself was all these things that Sofus talked of—bird-fowler, fisherman, and peasant; was striving, as a Faerish man may, to be worthy one day of marrying a beautiful Faerish lass (whose portrait he had shown us) living at Gjov, the village in the almost inaccessible cleft at the head of the fiord, a full day's journey away by boat. Now he handed us a leg of wind-dried mutton. According to the Faerish custom each man carves therefrom as much of the wine-red raw meat as he needs, using his belt-knife in his right hand as he holds the joint in his left.

Sofus served us all with a drink that looked like gin, but tasted far more virulent. Followed by milk, rye-bread, butter, cheese, and cold roast-mutton fat, the whole spread a genial glow over the human frame. The highly 'cheesy' raw mutton is difficult on first acquaintance, but it rapidly grows on the palate.

"To Sydredal!" next said the energetic Sofus, who, it was clear, had determined to offer us in turn all the entertainments he could devise. "You will land there, yes? And see the old home of Sofus? A grand place, all shut in by the mountains—beautiful, yes?"

The green oasis looked to us as beautiful as its name, though it seemed as wildly inaccessible from the tumbled shore as it is from the mainland beyond its crater of inland cliffs. As we cruised along Ellis and I jiggled a rod through the water, catching small saithe with exciting rapidity.

A cormorant—another table delicacy—having been sighted, Carl got into the prow with his gun. But the bird was too wily to get within range, and Carl too humane to risk an unprofitable shot.

Suddenly the long flat head of a grey seal appeared within twenty yards of us. Sofus sprang for his rifle. The seal watched him until he was about to shoot, then quietly submerged, and ever after appeared tantalisingly just out of gunshot. Neither would Sofus risk a long shot, though he proved to us his aim by cleanly picking a limpet off the rocks with a bullet at twenty yards.

More of the fire-water and more of the wind-dried mutton before we lay in under the Sydredal shore. But such a terrific wind was drawing down the 'Dal' with the mist from the mountain-tops that it was impossible to risk mooring the boat. A moment ashore to visit the nests of tern and French tern (black-headed gull) before we were called back to cruise along under the warmth of the cliffs again.

Despite the failure to visit the old home, Sofus was now more sparkling than ever.



R. M. Lockley

R. M. Lockley



Ferrying a cow across the fiord is a ticklish job, requiring careful balancing to counteract the lurching of the captive beast

Most of the boats in the Faeroes have to be launched by windlass over almost perpendicular cliffs between 50 and 150 feet high



A Faerish farmer with his sheep-dog and metal-shod staff, for support on the steep grassy cliffs where his sheep feed

R. M. Lockley

Home-grown corn—chiefly barley and rye—is ground by hand for each day's needs on millstones that have been in use for centuries



R. M. Lockley



R. M. Lockley

Above all, a young Faerish man is admired for his skill on the cliffs with the bird-catching net. But the heavy toll in lives taken by this occupation accounts for the low proportion of old men in the islands.
(Below) Plucking puffins in a Hestö village street

R. M. Lockley





H. G. Veevers

Grindhval or pilot-whale hunting has been practised in the Faeroes since the 9th century. Here the hunt has begun. Whales, churning the sea into foam, are being driven in



H. G. Veevers

On a given signal the boats draw near, a man in each stabbing the rear whales with his lance, while another produces a noisy splash with a heavy stone on a line



Then men from the shore rush among the animals and fix large hooks, attached to ropes, into their necks; after which the whales are killed by a cut in the throat and dragged ashore

The first portion of the catch is always auctioned to provide money for the repair of the damaged boats, which are often completely smashed up by the grindhval's dying struggles



H. G. Veners

The whales are measured in 'skins' (200 lb.), the largest whale going to the man who first sighted the school. The remainder, sometimes numbering 500 animals, is divided communally and among participants in the hunt



H. G. Veners

While the sysselmand (hunt leaders) and elders are dividing up the catch, the rest go to the dance-hall where they spend the night in Faeroe dancing and the singing of traditional hunting-songs



It was clear that he shared to the full the restlessness, the midsummer longing of the men of Faeroe to travel and see each other; to go up and down those wonderful fiords in the fine weather; to look in at the mist-capped settlements for a friendly gossip over meat and drink.

What do they talk of at these meetings? Sofus, like all Faerish men, loved to talk politics, both local and international. He loved England, he said, for her greatness, but hated her for the stupid way in which she consistently let slip her 'mighty' chances of securing world peace through the firm collective effort of English-speaking nations and the little nations, like Faeroe, that loved England. He admired the efficiency of dictators, but feared their steam-rolling of minorities and minor nations. We wisely refrained from suggesting the obvious truth—that Faeroe at least was safe, no one but a Faerish-born could want to face the heroic struggle demanded by Faerish conditions.

Before we returned over the fiord Sofus remembered that he had sealed the plighting of his troth to a Faerish maid twenty years ago by hiding a sixpence (half kroner) in a crevice in the cliffs near the cormorant colony. Would it still be there? He knew the exact crevice. Twenty years ago! He was burning with curiosity! If I would climb up with him. . . .

We leapt ashore while Carl and Ellis held the boat off from the rocks. Up and up—Sofus, for all his chauffeuring, had not lost a sure touch on the cliffs, and only an experience of climbing elsewhere enabled

me to keep up with him. Then the ledge where the sixpence lay, a ledge with crevices sprouting scurvy-grass (which Sofus, declaring it good medicine, ate voraciously). But where was the exact crack? Had it disappeared when the cliff fell away here? Maybe there had been many falls in twenty years. Sofus's brow was dark with anxiety.

We could not find it. Sofus, straightening himself as much as the circumstances would allow, looked out over the fiord with a restless eye. At midsummer in Faeroe it is always light, but the sun had rolled low about the hills in the north. With an uneasy look at the troubled sound which we would have to cross presently, Sofus now decided that the weather looked bad, in fact an immediate return home was indicated. In any case it was now nearly midnight.

It is always easier to climb up than down. We took our time, and, loaded with scurvy-grass, at last got to the boat. Sofus dealt out another drink and masterfully took the rudder lines. Muttering still about the bad weather, he steered die-straight for home, for our island of Kolter. The little boat cut squarely through the breakers of the mid-fiord current, and came by degrees into easier water under the shadow of Kolter's mountain.

The inexhaustible Sofus now discovered that the weather had taken a turn for the better. We might even spend the night fishing if we cared? But first a little trip up to the farmhouse to renew acquaintance with the coffee-pot and some solid victuals.

PHOTOGRAPHIC NOTES

Edited by F. S. Smythe

10. COLOUR PHOTOGRAPHY (3)

There are three successful colour photography processes at present available for the general public. All of these produce excellent colour transparencies at a fairly inexpensive rate. But it is impossible for the amateur photographer to obtain from any of them cheap coloured prints on sensitised paper. Because colour pictures made by these processes can only be viewed as transparencies or by projection, all three are used to their best advantage with Cine cameras in sub-standard gauges ranging from the 8 mm. 'straight-eight', to the 'double-eight', 9.5 mm. and 16 mm.

In these notes last month a

short survey was given of the Kodachrome subtractive colour process.

The Agfacolor process, like Kodachrome, is a subtractive process, but differs in the method by which the colour is inserted into the film. In Kodachrome, dye-coupled developers lay down the dye-layers during the processing. In Agfacolor special 'dye-producing components' are combined in the emulsions of the film. During reversal processing the developer re-acts to give metallic silver, plus a special oxydation product. This product in the emulsion couples with the three 'components' to form positive dye images. A mild oxydising agent removes the silver in front of the images and the process is complete. Having mastered these two subtractive processes, it may be somewhat difficult to take in at first the intricacies of the Dufaycolor process, which is additive. The base of the film is printed with a fine transparent colour

pattern known as the 'réseau', consisting of minute blue and green squares and red lines. The réseau pattern is reproduced 500 times per inch and is prepared by stencil-printing with dyes between ink lines which are bleached after each successive printing. Protected by a layer of varnish the réseau is covered with a Panchromatic emulsion super-imposed with a black paper cover.

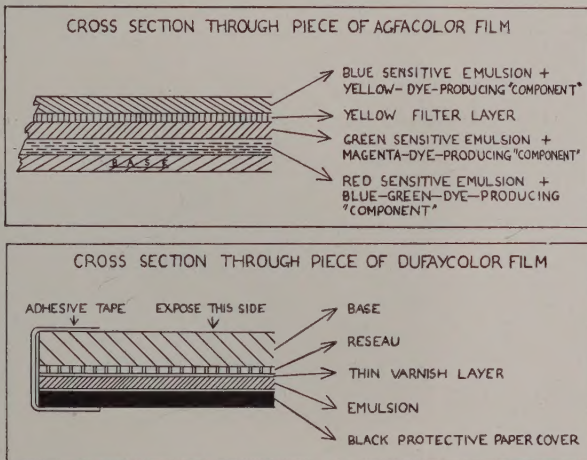
Exposure of the film takes place through the base so that the light passes through the réseau before reaching the emulsion. The image is thus broken up into three sets of minute areas representing the red, green and

blue components of the picture.

After photographing a red object, for example, there is a silver deposit immediately behind each red section in the réseau—bromide behind the green and blue areas is unaffected. By reversal treatment silver deposits are produced behind the blue and green areas while in the red areas the film remains translucent. Light can pass only through the red sections of the réseau, thus giving the form of the original red object.

The same method applies in the reproduction of any other of the three primary colours, intermediate colours being obtained by correct proportioning of the amount of light allowed to pass through each of the elements of the réseau pattern.

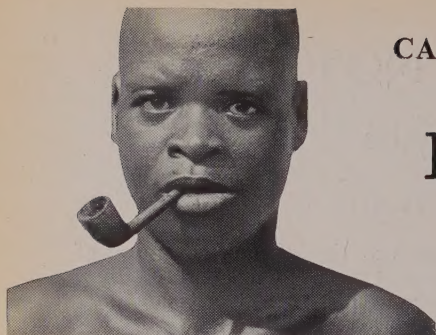
Dufaycolor is an additive colour process because the final colour picture is obtained by adding the light transmitted by each of the separate units of the réseau pattern.



In Agfacolor, unexposed emulsion is dyed in complementary colour. In Dufaycolor, minute filters in réseau are used for exposure and projection

CADBURY CAVALCADE

Head-Loading in COCOA LAND



I am a Cocoa farmer. My farm is six miles in the Bush, and the only road to market is the Bush trail. With heavy head-loads all my people help carry the Cocoa harvest to the nearest Cocoa broker, who buys for Cadburys.



A forest trail in Cocoa Land is not a broad highway. Sometimes it is not a highway at all, but a river. On the right, you can just see my head under the sack. Well, that's about as deep as I can go without going under, but it's happened to me before now, and in Cocoa Land we take the rough with the smooth.

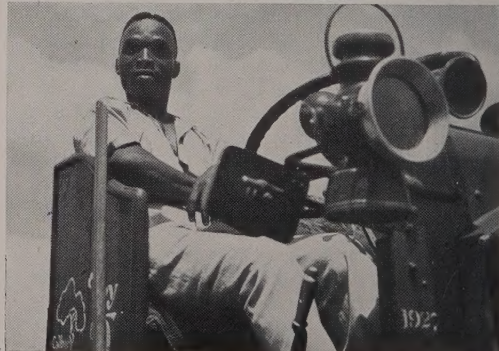


Even our womenfolk have to lend a hand, as you can see for yourself. They like to put their load in an enamel basin, set squarely on their heads. Carrying loads in this way gives our womenfolk a graceful carriage.

I generally sell my crop to Mary Reynolds, an old friend of mine. She is a very successful woman broker. I always get a good price from Mary, though she says 'Boy, if them beans ain't first-class don't ask me to offer them to Cadburys.'



This lorry - driver looks proud. Well, why not? He drives a Cadbury lorry. No Bush trails for him, lucky fellow. He goes forty miles an hour on the broad, straight Government motor road. He gave my wife a ten-mile lift on the homeward way, so little Yuba began to know what it means to be a Cocoa farmer's boy these days.



Last time we went to town my wife decided to be vaccinated. Here you see her in the market place with the public vaccinator at work. That's my youngest boy Yuba. I reckon he is thinking 'It will be my turn next.' Note the wife's luggage on the ground, ready to go on her head for the homeward journey.